VOL. XXIII. NO. 1. JANUARY, 1913

THE MONIST

A Quarterly Magazine

Devoted to the Philosophy of Science

Founded by EDWARD C. HEGELER.

CONTENTS:

PAGE

PSYCHIC AND ORGANIC LIFE.
ERNST MACH 1

PUSH? OR PULL? CONTRASTED VIEWS OF THE NATURE PROCESS.
WILLIAM BENJAMIN SMITH 16

FICHTE'S CONCEPTION OF GOD.
ELLEN BLISS TALBOT 42

TRAGIC EFFECT IN SOPHOCLES ANALYZED ACCORDING TO THE FREUDIAN METHOD.
ALBERT R. CHANDLER 59

SCIENTIFIC THEOLOGY.
T. PROCTOR HALL 90

ATOMISTIC DYNAMISM.
ARISTIDES PRATELLE 102

CRITICISMS AND DISCUSSIONS.
The Paradoxes of Pragmatism. B. H. BODE 112
Professor James and the Psychology of Religion. EZRA B. CROOKS 122
Madame Clémence Royer 131
Theonomy (With reference to Dr. Hall's "Scientific Theology"). EDITOR 137
A Correction and Some Remarks. P. E. B. JOURDAIN 145
The Mechanistic Problem. EDITOR 148
Wrong Generalizations in Philosophy (Schopenhauer and Freud). EDITOR . . . 150

BOOK REVIEWS AND NOTES.
The Mechanistic Conception of Life, *Jacques Loeb*, 152.—Die Mechanik in ihrer Entwicklung, *Dr. Ernst Mach*, 158.—The American Philosophy Pragmatism, *A. v. C. P. Huizinga*, 159.—Die Weltanschauung Roberto Ardigo's, *Dr. J. Bluwstein*, 159.—La société et l'ordre juridique, *Alessandro Levi*, 160.—Weltbegriff und Erkenntnisbegriff, *Viktor Kraft*, 160.

CHICAGO

THE OPEN COURT PUBLISHING COMPANY

1913

COPYRIGHT BY
THE OPEN COURT PUBLISHING CO.
1913

VOL. XXIII. JANUARY, 1913. NO. 1

THE MONIST

PSYCHIC AND ORGANIC LIFE.[1]

WHEN we place a finger in the hand of a new-born child, he clutches it tightly; if we put a finger in his mouth, he immediately sucks it with might and main. Similar observations may be made of animals, and even—though not quite so easily—of plants; that is to say, various stimulations of the organism produce each a particular reaction, most of the reactions being directed, apparently, towards self-preservation.

If we examine the stimuli that affect our bodies, we notice that in addition to the reactions resulting immediately from stimuli and those intentionally modified by us there is something else which is not discernible objectively but only subjectively, and that is sensation. Our sensations are very rich and manifold. It is very probable that this is also true of creatures with organizations resembling ours; this assumption, however, becomes less and less valid the more the organization in question differs from our own. We can distinguish our sensations one from another, and can remember them.

The orderly, continuous coherence of sensations and memories makes up consciousness. But even our sensations are not always equally clear and distinct, and our sense of their connection with each other is not always equally strong. In sleep, in dreams, in fainting fits, memory and the sense of coherence fail us either partially or

[1] Translated by Margaret Ladd Franklin from the *Oesterreichische Rundschau*, XXIX, 1.

entirely. The farther back into our youth our thoughts penetrate, the less clear our memories become; at length we can discover only occasional islands of remembrance, and finally nothing at all.

We are forced to conclude that what may happen sometimes to us may happen also to other living creatures. Perhaps those that are least like us pass their lives in a kind of sleep or dream or semi-consciousness, so that their psychic life has scarcely any resemblance to our waking condition. For those organisms especially whose existence is maintained by automatic reactions to certain disturbing, injurious stimuli, a more fully developed psychic life is not necessary.[2]

Memory is the reawakening of a previous psychological state. A sufficient condition for this reawakening is the excitation of one element of the earlier state. We are therefore justified in asserting that every part of a given psychological state seeks completion by uniting itself with the whole to which it once belonged. This is the so-called law of association through simultaneity, upon which depends our ability to assign to each memory its proper place in the temporal series. If I see a dish, or a box, and also take hold of it and examine its contents, then the mere sight of it afterwards will remind me of its feeling to the touch, of its contents, and so forth. This may be useful to me in that it may save me the trouble of unnecessary further investigation; or it may deceive me, when, for instance, what I have seen is a mere optical image, which cannot be touched, or a picture, which affords me no further sensations, or very different ones from those I had expected. Cases in which memory is an aid to us we speak of as perceptions; cases in which it deceives us, as illusions. I experience a special kind of illusion when I watch the

[2] Cf. I. von Uexküll, *Umwelt und Innenwelt der Tiere.* Berlin, 1909, Springer.

lights and shadows cast upon old gnarled tree-trunks when the setting sun shines in among the leaves. The heads of bears, tigers, and men come into view, this light or that shadow having the effect of a snout, or a nose, or an ear. One has to guard against illusions such as these—half unconscious, half voluntary—when, at the end of a long and tiresome railway journey, one is looking at the rocks, trees and other objects by the side of the track. Thus it is that in our consciousness sensations unite with the memories they awaken to form many kinds of complexes, some useful, some disadvantageous.

When we compare memories with sensations, we find that the former appear to us dull, pale, imperfect, sketchy, fleeting, in comparison with the latter. But we must consider that sensation furnishes many details to the adequate seizing of which a considerable duration of the stimulus is necessary; on the other hand, the stimulation of memory takes place instantaneously. If we take the pains to observe the separate elements of the sensation, we can also keep them in mind—that is, recall them to memory. This is shown by the fact that particularly simple objects, which we get to know fairly accurately without any trouble, give rise to vivid memories. Think, for instance, of a big black A on a white surface, or of a regular star-pentagram, with one point vertically upward, drawn with green chalk on a black surface. Think of a cube presenting three surfaces to view, the upper horizontal surface yellow, the left-hand vertical surface blue, the right-hand vertical surface red. In such cases, for which one knows the rules, one will have no difficulty in obtaining a fresh, vivid memory. In cases where one has not observed the details of the impression, it is mere tautology to say that one cannot call up a vivid memory. An unpractised person would have a great deal of difficulty in remembering a Moorish ornament complicated in color and in form, such as those in Owen Jones's

Grammar of Ornament. The physicist has no difficulty in remembering exactly a spectrum, or an interference phenomenon, upon which he has been engaged; and a zoologist can draw an animal from memory. If one wishes to picture to oneself a garden arranged for a festival, it helps very much if one thinks of oneself as engaged in the work of preparing it, hanging up the decorations, the Chinese lanterns, etc.

One of my sons, who is a painter, will watch a street scene closely, but will not put it on canvas until he comes home. "In order to see what is typical in the figures," he says, "I must first imprint upon my mind by long-continued observation the regularly recurring characteristics of each figure. While I am in the street I pay attention chiefly to the details, to what is characteristic in the figures, whereas when I am at home I sketch patches rather than figures, in order to obtain the necessary relations of light and shade, and then read into these patches the corresponding figures. The after-image that I get when I close my eyes is often helpful. Figures in a skating scene are particularly easy to retain in this way, because they give a strong after-image. In copying pictures I think I have learned a great deal of technic. By dint of practice I find myself able to copy a painting from memory."

Memories are awakened by sensations, but it may also happen that one memory is aroused by another. The law of association for memories is none other than the above-mentioned law of simultaneity. Memories are awakened originally only through temporal contiguity. But since in the course of a lifetime our memories have come into temporal contiguity in a great multiplicity of ways, they have lost the strong and definite time reference. Memories without express time reference we call concepts. Concepts are the building-stones of the freer intellectual life. Now since concepts have their roots in very different sen-

sation realms, and since corresponding to those sensation realms there are different memories which were separately acquired and may be separately lost—the human memory consists in fact simply of a bundle of separate memories—the result of all this is that the mutual excitation of memories leads man along the ways of biological interest through the most remarkable labyrinthine paths.

Suppose, for instance, I am arranging an experiment in anomalous dispersion; the names of the originators of these studies — Christiansen and Kundt — come into my head. The former I met in London, the latter in Paris. Typical bits of these cities rise up before me. I see the scenes from the Paris electrical exhibit and from the congress of electricians held there in 1881; I see the first electric road, the great dynamo machines, the incandescent illumination, the Jablochkoff lights in the Avenue de l'Opéra; I hear the songs given out by the many Edison phonographs; I make the acquaintance of Wroblewski and am reminded of his sad death; I hear a lecture by Melsen—which suggests experiments with projectiles and brings me back again to my laboratory here in Prague. All this in a few seconds! Of all that my senses experienced in those three months, there are left to me only a few vivid little impressions on eye and ear. A few charming pictures of Paris streets still cling to me. I hear Helmholtz being consistently called "Monsieur Homhotz," while Emil Dubois-Reymond, on the other hand, pronounces German names with a strong French accent.

What is the cause of this poverty of sensations? It lies in the fact that while in Paris I lived more in my mind than in my senses. How do I know that I was in Paris at all? I took a ticket for Paris at the station in Prague, on the assumption that all men mean the same city when they say "Paris." I did not use my senses to find that city. What first-hand knowledge of geography is shown,

UMI

on the other hand, by a swallow returning from Africa! After escaping the kitchens of Italy, it finds again not only Vienna but even the old street, and in the street the house with its old nest. I ask for food and drink, for fork, knife, spoon, compasses, ruler, and yardstick on the assumption that others use these words in the same way that I do, and that others react towards these things in the same way that I do. Of course the things must be recognized by more or less definite sensation-marks, but it is not in the least necessary that I myself should thus recognize them. The sense-characteristics of an object may vary more or less without invalidating its name, and they belong to the domain of various different senses. A man's senses are relieved through the help he gets from other men, while his intellect carries a correspondingly heavier burden. The swallow, on the contrary, has to depend entirely on its senses.

G. T. Fechner, in the second volume of his *Psychophysik* (1860), and Francis Galton, in his *Inquiries into Human Faculty* (1883), give accounts of their investigations concerning the power of visualization. The results arrived at by those two investigators are in agreement. In many people—travelers, artists, children, simple men whose occupations require the use of the senses—the power of visualization is great. They can represent to themselves the objects with which they have been engaged, seeing them in all their details and in vivid colors. Those, on the other hand, who are much occupied with abstractions —scholars, for instance, and especially philosophers—have only pallid and indistinct visual images. This is the natural consequence of the habitual inactivity of their senses. I think that for my part I belong in the intermediate class; I have, indeed, kept my visualizing faculty in constant practice, but I readily admit that it has suffered some-

what after all through the attention I have given to abstract things.

The ability voluntarily to summon up clear and accurate memories of sense experiences must be distinguished from the faculty of retaining sense impressions involuntarily and having them reproduce themselves without intention on our part. I have only to busy myself for a while with the vibration curves described by tuning-forks in white on carbon paper, and these curves will flash before me now and then, especially at twilight time, with all the vividness of reality—and always without any exercise of my will. The forms that we observe in this fashion are so closely allied with the things themselves as we have actually seen them, and so different from visual after-images, that Fechner was right in designating them as phenomena of sense memory. When, as a child, I lay down to sleep and shut my eyes, my whole visual area was filled with the most beautiful changing wall-paper patterns—generally flower designs. Even now, when I am a little tired, and shut my eyes, especially on a very sunny afternoon, I at once see a kind of wall-paper pattern, usually greenish yellow on a violet ground. The colors of figure and background often change to their complementaries, as they do in the case of the well-known polarization-figures produced by calcspar when the nicol is turned through a right angle. A short time ago, I saw before me in one of these involuntary observations a yellow-green bough with oak-leaves and acorns, beautifully shaded and molded.

Just before one falls asleep, these apparitions assume a special shape. One sees various human and animal forms, moving slowly, changing their shapes and identities, now vividly colored and now pale, and gradually passing over into real dream pictures. Johannes Müller has called them "*phantastische Gesichtserscheinungen*" which change of their own free will; Maury and other French investigators

call them *"hallucinations hypnagogiques."* They are often quite strange, with nothing about them that seems familiar. But apparently they are really only memory pictures retained mechanically, sometimes even against our will, and coming back to us perhaps out of a distant past.

When I have been torn hither and thither by my thoughts throughout a sleepless night, and then finally, being tired out, succeed in restricting my attention to the visual field, then the slowly changing phantoms appear, and sleep generally follows. Once very late at night, while this change was in progress, there appeared at my left a rich foliage, and at my right, reaching close to the bed, a solid wall of rock which hid everything else from view. This interested me so much, since it reminded me of a scotoma which has sometimes troubled me, and also of a well-known desert hallucination which has been described under the name of "le ragle," that I became wide awake and lost, for a time, all chance of sleep. The slow transformations that the visual phantasms undergo when the attention is concentrated entirely upon them, is due to the absence of associational leaps from one memory-region to another. Occasionally, especially in dark winter nights, my visual phantasms are very colorless: sometimes I see deep black on a black ground, often splendid iron gratings.

Towards the end of a deep, peaceful sleep I see particularly quiet and stable phantasms, and I continue to see them even after I wake up. I wake out of a sleep of this kind and lie still for some time, with my eyes shut. I see my familiar bed-spread with all its folds, and my hands resting upon it. If I open my eyes, I find that it is still quite dark, or else that the folds of the spread, and the position of the spread and of my hands, are quite different from what they were in the phantasms. On one such occasion I see, as I lie awake with eyes closed, an entirely unfamiliar spread, of mottled color—gray, black and white; and it seems to

have high ridges with strong lights and shades, like a little bare granite mountain range. When I open my eyes the phantasm disappears, and I see my usual bed-spread. Another time as I wake up I am looking at a great flower-bed filled with many-colored flowers, like the flower-beds I have often seen in elaborate gardens. The colored phantasms come to me now much more readily if there is a bright morning sun, whereas in my youth this condition was not necessary.

I see a green river slowly gliding between fair meadows. The river changes gradually into a blue-green lake. When I awake the morning sun is shining brightly into the room. The quietness of the morning phantasms seems to be connected with the suppression of all disturbing associations—a condition which we may recognize as we wake up, since we often have to think for a minute before we know, for instance, whether it is morning or evening.

If one dreams that he is wandering through endless halls and cannot find the way out; or that he is vainly searching the house for his hat, or the familiar city for his house, or his street; or that he cannot read a text twice, because the letters are always getting mixed up; or that the money in his purse adds up differently every time he counts it over;—if, in short, there is no logic whatever in one's dreams, this state of things seems largely due to the spontaneous transformation of the dream phantoms—a transformation which is quick or slow according to one's mood.

The associations that take place while one is awake are governed by the same principle as those that take place in dreams, except that more possibilities are generally open to them. A sensation, or even a mere memory, that comes upon us in a waking hour, generally gives rise by association to a series of ideas, which produce in us a particular reaction and determine us to follow a definite line of conduct. A series of images started in this way may, if one

is awake, be prevented by some chance disturbance from running its course; but in a dream this cannot happen. A nervous man who while awake has thrown away a lighted match and neglected to stamp it out, may dream the next night about fighting a conflagration.[3]

A dream experience may also make itself felt very obstinately in a waking hour. Some years ago I dreamed very vividly that a manuscript which I had given to a publisher a long time before had been completely forgotten. When I was awake it took me several hours to persuade myself that the thing was only a dream. Several years later this dream came back to me with all the old vividness. This time, however, I succeeded in tracing the illusion to its probable source in an actual experience. Towards the end of the sixties I had the manuscript of the *Analyse der Empfindungen* in large part finished, and was thinking of dedicating it to Fechner. In a talk I had with him he appeared to be displeased by certain differences between my views and his. I therefore gave up the idea of the dedication to Fechner, and for a long time thought no more about publishing the manuscript at all. Vestiges of my plans, however, may still have lodged in my dreams, and then affected me in the daytime like a menacing psychic disturbance. Thus do waking and dreaming form two interconnected and mutually illuminative parts of the psychic life. But waking and dreaming, and hypnosis, too, in its various forms, all reveal to us only detached parts of the psychic life.

If in the course of a sleepless night I have straightened out part of my next day's work, I am often unable, when sitting at my desk, to recall the thoughts I had in the night. Careful remembrance of my situation and surroundings at the time the thoughts first came to me, will sometimes bring them back to me even at my desk. I am

[3] Cf. W. Robert, *Der Traum*. Hamburg, 1886.

forced to suppose that the existence of an associative relation between different conscious conditions must greatly strengthen one's command over one's own thoughts.

Whole epochs of the psychic life sometimes fall away from us, as is shown in a report made by Prof. A. Forel,[4] in connection with his assistant Dr. Naef. A Mr. N. came, by way of Naples and Genoa, to Zürich, and lived there unconcernedly, without knowing who he really was or to what family he belonged, until he saw a newspaper notice saying that a man whose name was the same as that on his own passport had disappeared, and that his family was making a search for him. Although he could remember nothing whatever, still he now felt that he was psychically diseased, and consulted Professor Forel. By cautious and persevering psychic treatment he was gradually brought to remember a journey to Australia which he had undertaken on an official mission; his memory, which he had lost through an attack of fever, was restored to him; he was given back to his family, and released from his tragic plight.

Only recently people are beginning to observe the phenomena of memory in connection with other organic processes. Ewald Hering has recognized the traits common to organic processes with and without the presence of consciousness, and has described them in his essay on Memory.[5] R. Semon[6] is investigating this relation more thoroughly; and he has adopted a terminology which takes nothing for granted in the way of biological theory.

Many biological processes give the impression that they are based on a mechanical repetition of a lesson that has been learned by heart. P. Huber tells of a certain cater-

[4] Forel, *Der Hypnotismus,* fifth edition, pp. 215-233.

[5] Hering, *Ueber das Gedächtnis als eine allgemeine Funktion der organisierten Materie,* 1870. English translation, *On Memory,* third edition, Chicago, Open Court Publishing Co., 1902.

[6] Semon, *Die Mneme,* 1904; *Die mnemischen Empfindungen,* 1909.

pillar which produces for its metamorphosis a very complicated web. If he took the caterpillar out of a web that had been constructed as far as the sixth stage, and put it into one that had only reached the third stage, then the caterpillar would complete the fourth, fifth and sixth stages. But if it was put into a web that was further advanced than the one it had been removed from, it would begin the work just where it had left off in its last web, not realizing that its labor was superfluous. The robber wasp (*sphex*) digs a hole and then flies out for its prey, which it paralyzes by stinging it in certain definite parts of its body, to serve as food for its progeny. But before taking the quarry into the hole, the wasp creeps in to reconnoiter. Fabre sometimes removed the quarry a little way. The wasp then dragged it close up again, and again crept into the hole which it had just investigated. Fabre was able to repeat this experiment forty times in succession with the same result, whereupon he took the quarry away altogether. The wasp then stupidly closed up the entirely empty hole. Accordingly, it acts, not with reflection, but just as an unmusical player on the piano, who has mechanically learned a piece by heart, must always begin over again from the very beginning if he is interrupted.

Many insects live in the water while they are larvae, but not when they are fully formed. However, they go back to the water to lay their eggs. It seems probable that the physiologico-chemical process of forming eggs in their bodies reminds them of their own embryonic stage and their liking in that condition for the water.

Traits analogous to memory seem to be often evinced in the organic world. The law of association, or completion through temporal contiguity, holds good not only for the fully conscious psychic life, in which it was first observed, but also for dreams, and even for unconscious psychic processes. Is the law of association, however, the

only one that can give us light on the matter? If one wants fully to understand the psychic life through the law of association, one must accept the hypothesis of congenital associations in addition to the associations acquired during the life of the individual. The physiological correlate of the former kind of association would then be reflex action. It appears that we must not merely regard the separate processes of the organism as capable of being excited one by another, but that each partial process must also be assumed to have an independent life of its own. In this way only can we obtain a correct conception of a living organism.

I have shown above how a very exact memory may be called up by means of association. But any one who has experienced the spontaneous appearance of a phantasm, an hallucination characterized by complete sensuous objectivity, will hardly believe that this phenomenon is identical with the former one. In the former case we have the careful completion of a memory through conceptual steps; in the latter we are more often compelled to think, as does Johannes Müller for example, of a peculiar kind of independent existence. It has been found from psychiatric observations that the destruction of both eyes does not incapacitate one for having optical hallucinations, whereas the destruction of a certain portion of the cortex does have this result, and also deprives one of optical memory images.[7]

I have mentioned a scotoma from which I suffered. It began soon after an employee of the laboratory had to be dismissed because of his conduct. It was a flicker-scotoma, of the kind which look like drawings of fortifications. It started in the middle of the visual field, spread itself out over the whole area, and disappeared at the edge. Kant,

[7] See, for example, Forel's *Der Hypnotismus,* Stuttgart, 1907; fifth edition, p. 33.

in one of his minor works, written when he was growing old, has described a similar eye disease. A distinguished oculist was unable to give me any information about this phenomenon, but the psychiatrist Dr. Arnold Pick immediately recognized it as due to a temporary affection of the brain which French doctors have called *migraine opthalmique*. My scotoma recurred from time to time without ascertainable cause, and on each occasion vanished after a few minutes, having no annoying after-effects. It was gray on gray, with an occasional suggestion of faint colors. Sometimes there appeared distorted checker-board patterns. On one occasion I saw a gray-ribbed umbrella with a small hole within which my sight was undisturbed. After an apoplectic attack the scotoma completely disappeared, and it was only many years afterwards that it again showed itself now and then. It will no doubt be admitted that in the scotoma there is manifested a peculiar kind of cortical phenomenon which differs in origin from ordinary sensation and which has no connection with the laws of association.

Johannes Müller has already emphasized the part played by fatigue, hunger and thirst in the production of phantasms, and has thus also given us a better understanding of the hallucinations in which one imagines one is wandering through a desert. The desert hallucinations, which are described by d'Escayrac de Lauture, and later by P. Max Simon in his book *Le monde des rêves*,[8] are common hallucinations, which one may have anywhere, even in bed. Ingenious physiological explanations, based on the structure of the retina and on stereoscopy, are entirely superfluous. Where the Arab sees palms, minarets, and camels, the European traveler sees fir-trees, clock-towers, horses, wagons, and so forth. Marco Polo long ago, in describing the desert of Lob (Gobi; in Chinese

[8] Paris, 1888; second edition, pp. 296-305.

Scha-mo, "sand-sea") spoke of the wicked deceiving spirits that lived therein (hallucinations), who led travelers astray by their voices and caused them to lose their companions. Even in the Bible the desert is full of uncanny things. Isaiah, speaking of the destruction of Babylon, says (xiii. 21):[9] "But wild beasts of the desert shall lie there; and their houses shall be full of doleful creatures and owls shall dwell there, and satyrs shall dance there."

ERNST MACH.

VIENNA, AUSTRIA.

[9] Professor Mach says in comment on this passage that the translation is probably unreliable. The German version translates "ostriches" where our Authorized English Bible has "owls." Friends of Professor Mach explain that the translation "ostrich" is a conventional term for a nondescript bird, that the word "satyr" means in Hebrew shaggy creatures like goats. The Polychrome Bible translates the passage thus:

"Wild cats will lie down there,.....
Their houses will be full of jackals,....
Ostriches will dwell there, satyrs will dance there."

PUSH? OR PULL?[1]

CONTRASTED VIEWS OF THE NATURE PROCESS.

"Yet I doubt not through the ages one increasing purpose runs."
—*Tennyson.*

THE ancient world had seven recognized, almost legalized, wonders. Though some might object to the particular selection, it was generally admitted that whatever they were there could be no more and must be no less than just so many,—for were there not just seven wonders of the sky, the seven wandering stars, and has not Winckler taught us, though Kugler would now unteach it, that in the old-oriental world-conception the history of earth was only a reduced image of the history of the heavens? To-day we have many more wonders than even seven times seven, but still we feel there should be just seven pre-eminent, and men of science are called on to decide by vote which they shall be! An excellent way this, to decide such questions and all others—by vote, provided only you are able to *weigh* the votes instead of merely counting them. Whatever these marvels of modern time may turn out to be, they will surely be marvelous enough, yet it seems that in all ages both ancient and modern by far the greatest wonder is Time itself. A rich and glorious word, far finer than the Dutch *tijd* or the German *Zeit,* or the Latin *tempus* or any of its derivatives, yielding only to the majestic Greek *aiōn* or *chronos*; far nobler than Space, which sounds thin and empty in comparison with the resonant

[1] Address before the Beta Chapter of the Phi Beta Kappa Society, University of Virginia, June 12, 1912.

German *Raum*. Pronounce infinite Space! how faint and feeble by the side of eternal Time! It is not alone however in the fulness of its diphthongal sound that Time surpasses Space, but far more in its inexplorable mystery, in its unfathomable depth of meaning. Space stands always before us, almost visible, solid, continuous, immeasurable, indestructible, immutable, everywhere the same. But Time seems at once more immovable than the firmament and more fickle than the wind, more fluctuant than the wave; more evanescent than the lightning flash, and yet more permanent than existence itself—the quintessence of contradiction, the apex, the node of all propositions, wherein all the threads of affirmation intersect and deny one another. Space has indeed its three dimensions, its triple infinity of determinations, its up and down, its right and left, its fore and aft, but it seems to have these everywhere exactly alike. Time has them not. It stretches itself out in one straight tract backwards and forwards interminably, but at once everywhere and nowhere alike. Down the long line unending rushes the momentary, the tremendous specter of the Present, the eternal visionary Now, shining with intolerable splendor, while far behind lies the dark, the dread, the desert pathway of the Past, which has been and is not nor ever more shall be, and before it the still darker more mysterious pathway of the non-existent Future, which is not nor has been, waiting to flash up momentarily into being and then sink back instantly into the opening sepulcher of the perpetual Past.

It is this deep-seated contradiction, this sense-bewildering, thought-confounding flight of the everlasting, the instantaneous Now, that has moved the German poet to his wonderful verses:

> "Threefold is the step of Time:
> Lingering comes the Future drawn toward us,
> Arrow-swift is flown the Present,
> In stillness everlasting stands the Past."

How much of time is ever existent? The Past has been, but is not; the Future is not, but will be; only the infinitely thin Present is. Like the whirling sword of flame wherewith the Eddystone lighthouse, that guardian cherub of the deep, cleaves in sunder the whole sphere of darkness that envelops it, so the gleaming vision of the Now cleaves with its film of unwearied radiance the solid blackness of the Future and the Past.

In all ages this majestic march of Time, this more than archangel flight of the Alone to the Alone, has bowed in reverential wonder the soul that dared to gaze upon it, and the soul has taken refuge from the fearful vision in the idea of the changeless God. "O Lord," exclaims the Psalmist, "Thou hast been our asylum from age unto age. Before the mountains were born or ever had been brought forth the earth and the world, even from everlasting unto everlasting, Thou art God. Thou turnest man unto dust and sayest, Return ye children of the earth-born. For a thousand years are in thy sight but as yesterday, so swiftly flown, and as a watch in the night." But man the thinker, the son of science, has not been content with the awful spectacle of the flitting Present; he has constructed for himself the solemn procession of the moveless Past and has called it history. Gone though it is like the lightning-flash, he still clasps it in imagination, like Ixion embracing the cloud for Hera. Yea, more, he has endowed it with invincible vitality. He has filled it in his fancy with all the seeds of both Present and Future. Even the natural man, the man innocent of all science, does this in large measure. He relates the Present to the Past not only in the order of before and after, not only in the relation of antecedent and consequent, but also in the far deeper mode of cause and effect. He says that the Past has made the Present what it is, that some subtle invisible linkage has bound together into one all the vision that is with all the visions that have

been. Even the man guiltless of all science, much more of all philosophy, does this, yea, even perhaps the spirit that still slumbers beneath us in the mere animal nor has mounted manward through the spires of form.

It is then the law of man's nature, perhaps the law of all nature, to vivify this lifeless Yesterday and to set it in vital determinative relation with To-day. The dead Past is indeed conceived by us as sempiternally living on in the Present, as making the Present what it is, with iron and inexorable necessity. Such is the prevailing scientific conception of fate, of destiny, more terrible than ever inspired the choral chant of an Æschylus or Sophocles. We call it Determinism, or, as Vito Volterra might prefer to say, mechanical heredity. The modern mind plays with this terrific conception as a child might play with a thousand horse-power dynamo or disport itself in the engine-room of the super-dreadnaught Thunderer. In comparatively few souls is the reaction at all appropriate to the imperial majesty of the idea itself. That the living breathing Present should thus lie grasped in the ghastly death's-hand of the Past is a conception that should be awesome and overpowering to whoever regards it directly, face to face. Yet such is its weird sublimity that the greatest minds of the world have rejoiced in it beyond measure and have proclaimed it with a genuine transport of enthusiasm. Nay, they have not been content to pronounce this absolute lordship of the Past over the Present, but they have stretched out its scepter over all the Future.

In a remarkable and oft-quoted passage, the famous wizard of the heavens, Pierre Simon Laplace, intoxicated with the prowess of his invincible analysis as perfected by his mighty compeer Lagrange, the two forming the most prodigious logical engine the earth had ever seen,

> "Two coursers of ethereal race
> With necks in thunder clothed and long resounding pace,"

that bore the car of mathematics in triumph through the conquered skies, Laplace, I say, has rightly declared that a sufficiently powerful human intellect armed with differential equations and an absolutely exhaustive knowledge of the physical universe at any stage of its being, could thence deduce its necessary and certain condition for any and all future times, or that knowing one moment completely he would know or at least be able to find out all the history of the interminable ages to come. Such an intelligence has been called a Laplacian intelligence, and it is not strange that man should pride himself on the creation or at least the possession of such stupendous powers of prophecy, of which he does indeed make brilliant use in forecasting eclipses and other phenomena exactly, to the second. Similarly, he vaunts that he could predict the exact spot, the exact speed, direction, and acceleration of each and every molecule now in our bodies, not for a day or week or year, but for all the æons of everlasting Time.

If we turn from astronomy to biology, we find there sole-reigning a concept of kindred grandeur and terror, the concept of heredity. The biologist, in particular the geneticist, beholds in each individual the highly complicate but perfectly definite knotting together of a countless number of strands of inheritance, fine, delicate, but infrangible filaments, compared with which the ultimate filaments of a spider's line are thicker than cable cords, out of which is woven without seam from top to bottom the infinite web of plant and animal history, "the garment of life that the Deity wears." These endlessly fine strands stretch back, unbroken, in rigid continuity through all generations, here and there coalescing in pairs, to knot themselves together into a new individual, whence however the same filaments emerge to be knotted together into still other combinations, and so on forever. As the shuttle flies back and forth in the whirring loom of time, the web

of life, the garment of the Godhead, grows and grows without ceasing, but the strands of heredity, the filaments of inheritance, remain the warp and woof in that universal loom. You are what you are because your parents were what they were, and they because theirs were what they were, and so on backward forever, yea, so on forward till the crack o' doom. Thus the Past, the remotest Past, reaches out its skeletal fingers and grapples both Present and Future in its grip of death. I repeat, such is the tragic grandeur of this conception that it has fascinated and enthralled the mightiest intellects, who gaze upon it as upon the visage of Medusa and are turned to stone.

When now we ask how we know that all this is true, that To-day and To-morrow are thus despotically dominated by Yesterday, that some single push from behind has propagated itself like an ether wave through all the world and determined all that is or has been or will be, the answer seems at first utterly inadequate. Express it in high-sounding phrase as you will, talk about Time as an *a priori* form of our sensibility, about the necessity and universality and objective validity of the category of causality—all these resounding vocables tell us finally but very little. The fact is, they mean that it is all only a way of thinking, which is indeed a part of our inmost nature and being, but still is after all a way of thinking, of self-interpretation of the spirit to itself, of constructing and imaging to itself its own experience. When the billiard ball A strikes the billiard ball B, the latter moves, and we say that the impact made it move, that it would not have moved but for that impact, that the momentum of A has passed over into B, that A's motion was the cause of B's. Nor is there any objection to such expressions. It is good that they are not objectionable, it would be very sad if they were; for they are the best we have, and there is no likelihood of any change or improvement. But when we ask how we know that A's

movement caused B's, we are dumb. We can perceive no causal nexus, no interlocking of the two events. So far as we can observe they simply follow one the other. We can never go back and undo the event and find out what would have happened if A had not struck B. "Now of deeds done," saith Pindar, "whether they be good or ill, not even Time, the father of all, can make undone the accomplishment." The most, the best, the last that we can know, is that the one event followed the other in this case, and similarly in all hitherto observed cases, and we may believe ever so confidently and unshakably that such a relation will always hold good. But the causal tie we shall never perceive, we shall never know that there is any at all. So much at least the great Scotchman has done for philosophy, for it is the unique merit of Hume to have perceived, first of men, the true state of case clearly.

We may, then, or we may not go on speaking of cause and effect and of the Past as determining the Future. In mechanics the notion of cause as agent has been surrendered. In a passage that has become classic, Kirchhoff declared even as long ago as 1877 that mechanics is the science of motion, its problem being to *describe* the motions of nature completely and in the simplest way. You observe that there is no reference here to cause or to effect or even to *force*. The motions in nature from the rush of a planet to the vibrations of a molecule, are to be *described* completely and simply, as a dance of atoms, where the motions and evolutions of each dancer are highly complicate and intricate and definitely related to those of every other, yet each carries on its own dance, and naught is said of one's affecting another. It is not a waltz, they do not even touch hands. But in ordinary work-a-day life we may still use most profitably the old forms of speech, even as in law, where half the time of instruction is given to explaining the new meanings of old terms. Nevertheless, it is a great

gain to perceive that these are after all only forms of speech corresponding to settled ways of thinking and not rendering adequately any inherent nature or quality of the happenings themselves. It is a great gain and a great relief to know that the despotism of the Past is after all only our own way of thinking about events, of ordering the totality of soul-experience serially, of smoothing out the infinite flexures of the crumpled rosette of the spirit into the shining silken ribband of history. Ah! you say, a wonderfully folded strip is must be, that can be smoothed out thus interminably. Yes, wonderful! indeed, unimaginably but not unthinkably wonderful. For the famous curve of Weierstrass, the exactest of all mathematicians, is crinkled in precisely this way; between any two of its points the length of the curve is infinite; if you clip out over so small a section and stretch it out, smoothing out the crinkles, you may smooth it out to infinity. We need not, then, stumble here.

It is very rare that a deep philosophic dogma may be distinctly visualized and made indeed palpable to the sense. But such is our strange good fortune in the case of the doctrine in hand, that the causal nexus does not lie between cause and effect in the realm of observed events, but lies if anywhere far back in the determination of the mind, which is depicting its own experience on the broad deep canvas of Space and Time. We all know about living pictures, and the few whose bank balances will allow it, are prone to while away an hour beholding the moving spectacle. All the most complicated events of life both real and imaginary are there represented with a vividness to which there is theoretically no limit. But surely no one dreams that any event there enacted stands in any causal relation with any other. There you may see the ball A strike upon the ball B, and see this latter speed away, but you know that the motion of the one had naught to do with

the motion of the other. If through some defect in the film the whole motion of A had dropt out, the other ball B would have moved precisely as it actually did. The whole system of motions, antecedents and consequents, exists beforehand simultaneously in the film, which itself is a construct of human intelligence imitating itself in this amazingly simple contrivance, which yet produces such multiform results. Very nearly so, to set forth great things by small, is the panorama of the world in Space and Time—a vast vision of the mind's own experience, a moving picture in which all the elements seem riveted together by adamantine nails of cause and effect, but nay, not so! The connections are not between the pictures but lie far behind in the film of our own souls, in the simultaneous psychic experience of the individual, of the race, of the whole creation of spirits that constitute the republic of heaven, the city of the living God.

So much for the tyranny of the Past, over Present and Future. It is a shadowy unreal scepter that is stretched out from that universal mausoleum of vanished ages. But you will say, "Well, after all, things do actually happen in fixed determinate order; the dance of the seasons is never in changed or inverted succession; still the circling hours speed on as ever, Spring clasps the hand of Summer, not of Autumn, and Winter, the old reprobate, still lingers in the lap of Spring. The unvaried orders of sequence and coexistence, which we call laws of nature, do still obtain as a matter of fact, and woe unto him who denies or defies them. What then is the difference, since all things take place *as if* the causal knots were there, whether they be really there or no? Is it not like asking whether the planet that the astronomers call Saturn be really Saturn or not?" Great indeed is the magic of the little words *as if*.[2] Un-

[2] There has recently appeared an imposing work, by Vaihinger, on *Die Philosophie des Als Ob*.

Of course, neither the phrase nor the idea is by any means new. As early

doubtedly the orderly process of nature is just what has been asserted, and well indeed for us that so it is, for otherwise the universe would be naught but an immeasurable madhouse, an asylum of the insane. But the *meaning* of the order is to be sought and found not in the visible infrangible structure of a material universe, lying out there beyond all consciousness, beyond the utmost reach of the soul, in iron strength, in rocklike rigidity, more insensible to the voice of spirit then the granite mountain to the cry of the wind, which was and is and will be when all life shall be swallowed up in the crash of worlds, in the star-dust of primeval chaos returned,—nay, not there! The meaning of the order, yea, the intelligible order itself is to be sought and found all and only in the constitution of the mind, in the nature of the soul, in the self-chosen forms of the activity of Spirit itself. If then the pace of the stars is steady, if the earth spins softly, uniformly on her unwearied axis,

> "Day's Eden brightness still relieving
> The awful night's intense profound,"

it is not because atoms are attracting each other according to the Newtonian law of gravitation, but because they are moving *as if* they obeyed that law; because both they and their regular motions are the mind's own projections of its own activities, and because those activities themselves are not at random but are inherently self-articulated, are implicated in a divine and eternal Order, whose everlasting *image* is the history of the universe in space and time.

Now, I maintain, it is no light or unimportant matter

as 1881, in a public lecture, printed in the *Quarterly Review of the M. E. Church, South* (April 1884), both the phrase and the idea were used by the present writer, and since then repeatedly and elaborately in various connections. Similarly and independently Dr. Carus has amplified the same notion in the same terms in his *Foundations of Mathematics* (1908, see page 79), in an article "The Soul in Science and Religion" in *The Monist*, 1906 (especially pages 250-252) and elsewhere, as is noted in his review in the September *Open Court* of Vaihinger's work, which itself dates back in large measure a full generation. The connection with pragmatism, as originally conceived and formulated by Charles Sanders Peirce, is obvious and important.

that the soul should understand and appreciate this state of case, that it should realize its supreme lordship over nature and nature's laws, that it should insist upon its indefectible title to the magistracy of the whole material world. We could not, we would not abrogate the laws of nature, the principles of gravitation, or chemical affinity, or surface tension, or even of natural selection. But why? Because they lie outside, beyond, and above our poor frail human nature? Nay, but because they lie within our nature, deep in the unexplored, unconscious, and universal depths, sunk far below the utmost plummet of *individual* experience. "When I gaze upon the heavens, the work of thy fingers, the moon and the stars, which thou hast ordained, What is man that thou art mindful of him, and the son of man that thou visitest him?" The Psalmist was right; he does not mean what an insignificant creature, but what a wonderful being is man, whom even Jehovah visits and crowns with glory and honor. The spectacle of the heavens has been thought to bow and humble the over-proud earth-born into dust by showing him his littleness and impotence; nay, but it should rather exalt and magnify the soul of man, who beholds therein his own wonderful creation. He who peers into the silent depths of the sky is really gazing into the mirror of the fathomless abysses of his own being. He who distinctly realizes this will not be terrified by any calamity that can overtake this image, neither by death nor by any other disaster; yea, though the heavens themselves should depart as a scroll when it is rolled together, his soul will remain a stranger to fear, for he will look for a new heaven and a new earth, not made with hands, the workmanship of universal Spirit.

No man that has once climbed this Pisgah peak and beheld the kingdom of the soul and its glory will ever surrender it. Well do I remember how in early years many

times I repeated to myself the stately lines of the elder Darwin:

> "Star after star from heaven's bright arch shall rush,
> Suns sink on suns and systems systems crush,
> Headlong, extinct to one dark center fall,
> And night and death and chaos mingle all.
> Till o'er the wreck, emerging from the storm,
> Immortal Nature lifts her changeful form,
> Mounts from his funeral pyre on wings of flame,
> And soars and shines, another and the same."

The grandeur of the verses would awe and melt even as it still awes and melts my soul. But never could I repress a feeling of intense dissatisfaction. What! Can this be all? What possible even least worth or meaning or self-justification can there be in a course of history that is born from chaos and dies in chaos, to be re-born from chaos again? Of what avail for Nature to mount from her funeral pyre and soar and shine in everlasting cycle, if only to sink back again in night and death, like a succession of aimless rockets shot up into the empty dark? What possible interest can any intelligence feel in a Nature that does nothing but "cast up from her dark abyss unceasing transformations of herself," without purpose and without aim?

But some one will say this is merely an esthetic, not a rational or logical, consideration. The fact is, he will urge, precisely as stated. Nature does precisely this thing, neither more nor less, and that is the end of it. Whether puny man be satisfied with this procedure of Nature, makes no difference; she is utterly devoid of feeling and cares not a straw for all the men in the world. *Sauve qui peut* is her motto. Such is "natural selection," the "survival of the fittest," where there is absolutely no standard or evidence of fitness but the fact of survival. This survivor is one of the fittest. How do you know? Because he has survived; therefore he must have been fitter than those who did not survive. Whether his superior fitness consisted in strength or in

cunning, in great size or in small, in speed or in sloth, in bright colors or in dull, makes no difference whatever. Nature has no end, no aim, no purpose in view. The initial push given in the primal curdling ether has passed on down the expanding ages, it strikes the Present from the bosom of the Past, like the bolt of Bellerophon launched from the chill bosom of the desert air; it determines all the Future with the mathematical necessity of the successive terms in arithmetic or geometric or other more complicate series, and propagates itself on forever, irresistible as lightning, unfeeling as stone, and blind as the blackness of midnight.

This appalling conception of history is the unavoidable consequence of any and every theory that accepts the outward universe at its face-value, as an ultimate reality, that thinks the world under the category of causality, that seeks to understand the Present and the Future as a necessary consequence of the Past. The whole doctrine is in the last degree logical, it has achieved great triumphs in the annals of thought, and it may very profitably be entertained as merely provisional, as a directive or working hypothesis, as an outward sensual symbolism of an inward spiritual truth. But as the truth itself, as the final word in world-interpretation, no matter by what high-placed prophets it may be preached, we must reject it utterly, not only as false, but also as an abomination. For we have just seen that there is no ground at all for supposing any such causal activity in the world of sense; any real action of one atom upon another, whether together or apart, remains forever unthinkable as well as unobservable. Moreover, a blind process of nature would be always unintelligible, and for several reasons. Even if we make the very minimum of assumption and try to deduce all the laws or habits of nature from mere chance, as simple grooves worn out in the loam of history by the ever-rolling wheel of events, still we must

assume the properties of numbers and the laws of chance, we must assume some medium, some vehicle of events, and must endow it with some definite properties, otherwise it remains unavailable for thought. By no analysis can we ever get out of these assumptions more than we put into them, and any additional property, any new synthetic judgment, will be merely a new assumption.

We cannot then start Nature out totally blind, acting perfectly at random, otherwise she could never select at all, having no principle of selection. Even in her most elementary processes there must be some choice, some preference for this rather than that. Otherwise why should Newton's gravitation take place according to inverse squares rather than inverse cubes? If you explain this by some still more elementary action, as of extra-mundane corpuscles or of ethereal vortex-atoms, the difficulty will be deferred but not removed, the obstacle will be rolled back but not away; for like questions will still be in place. Why do the corpuscles move in right lines? Whence the vortices in the ether? In short, there cannot arise a definite world, a world that is this and not that, except through difference and the recognition of difference somewhere in the generative process. But a blind Nature or nature-process could not recognize any difference,—this indeed is what we mean by her being blind. She cannot then be wholly blind, but must see ahead. A choice cannot refer to what has been or is, but only to what shall be. By the fittest we do not mean the fittest for the Past but for the Future; if not fittest for the Future, it will not survive. We may see then that the conception of a blind or aimless nature-process is not ultimately realizable in thought. It is exactly as if one should postulate an original impulse or push that had no particular direction at all. Such a push of equal intensity in every direction would annul itself and reduce to absolute zero.

UMI

But it is not only on such broad and abstract ground that we affirm the necessity of the notion of aim or direction in the conception of the nature-process. When we appeal to human experience, *the final and supreme court of cassation,* we find that no reasoning being reposes on anything else in thinking the conduct of reasoning beings. Anaxagoras had the high honor of being the first to declare that Mind ruled the world. But he was unable, of course, to apply his great idea consistently towards the explanation of the course of nature and so had to fall back upon the conceits of his illustrious predecessors, the Greek philosophers of nature. For this inadequacy he is sharply rebuked by Socrates in the Phædo. Logically and philosophically Socrates was right, but we should do Anaxagoras a great wrong to judge him by a system of notions of which he was ignorant, that had not been formulated at that early date. Without any refinement of terms we may state exactly enough the difference between the two conceptions. Let any one ask himself why he is present at a certain lecture. If he gives the answer in terms of the Past, in terms of push, in terms of matter or of mass and motion, all of which expressions are equivalent, then he has no choice. Let him begin the statement where he may, at 7 o'clock or 6 or 5 or 4, or a day or a month or a year or a millennium in the past, it is all one; he must describe himself and all his antecedents as pieces of machinery, in fact as automata, in which each state of motion has followed with iron rigor and necessity upon the preceding; he must say that the molecular whirlwind called his brain determined certain quiverings of his efferent nerves, and that these quivers fell upon certain muscles and determined certain contractions and relaxations and consequent motions that finally landed him upon the chair occupied. Such is the present word, such must be the last word, of physical science, and it is a most excellent one, eagerly demanded,

and quite indispensable to any perfect and final explanation. But every one perceives that such a statement, such a deduction of the Present from the Past, however accurate, is and always has been and always will be in all generations incurably lopsided and inadequate. For it states at most and at best only the concatenated antecedents, the material *causes* of the man's presence there; it says not one word about the *grounds* or *reasons* therefor. It answers perfectly the question *how,* but it is absolutely dumb with regard to the weightier question *why?* Now it is precisely this question *why* that every man puts and must put, and no man can be satisfied till it is answered. Moreover, it is a matter of immediate knowledge, as primary as primary can be, that no possible assignment of causes, of antecedent conditions, can ever satisfy the questioner, who is seeking for reasons and not causes. Still further, observe that the only satisfying answer will be in terms of the Future, and not of the Past. The man will say, "I desired to hear and see something or somebody." At each instant the desire was a present experience, but the thing desired was and remains from first to last in the Future. At the start he desired to hear the beginning, then he was eager to hear the middle, and finally became impatient to hear the end. When he heard that, he straightway heaved a sigh of relief and hastened home. Once and always his desire is still ahead and beckons him on from instant to instant. It is a voice crying out forever from the bosom of the flying hours. It is the call of the time to come. It is a tug from before, not a thrust from behind; it is the pull of the Future, not the push of the Past. Furthermore, whenever such a reason is assigned, every intelligence recognizes it not only as adequate but as final and incapable of reduction to simpler terms, as an ultimate fact of history. If there is any fault to find, it will be not with the reason but with the man for being drawn on by the reason: it may be said, perhaps, that

UMI

he allowed himself to be deceived, that the address was not worth hearing; but it will never be said that the desire, however ill-tutored, was not fully equal to its task, otherwise the man would not have gone.

Moreover it is absolutely inconceivable that any other desire but just that one, namely, the desire to be there at that time, whether to hear or perhaps to see some one else, should have drawn any one thither. This exact precision is very noteworthy. Still further, the desire must have been intense and strong enough, but it may have been a thousand times intenser and yet the result exactly the same. In the well-known song, if the Arab lover had come from the desert on a camel instead of a horse, his desire would have been the same though his speed would have been less. Entirely different is it in the material world, where there exists an exact quantitative equivalence between cause and effect. A small bullet may indeed kill a man as dead as a large one, but not with the same mangling. Here then in the world of reasons we find no place for the fundamental principles of the world of cause and effect. Here too we find finally but one Reason in a million forms and a thousand degrees. It is Will, Desire, Wish, Want, Appetite, Craving, Yearning, Impulse, Instinct, Life-urge, or what you will. All these terms are drawn from our own conscious experience and designate aspects or expressions of the one fundamental element, expressions immensely higher, more refined, and more elaborate than is this one uniform element in its unconscious manifestations—as if we should attempt to express the mental operations of a new-born babe in terms of the logistic of Peano. Since we may never hope to find in human speech a really appropriate name for this ground-element, for it lies far below the reach of earthly tongues, it might be well to employ some purely arbitrary and symbolic term, as Alpha. Or if you think the Greek Alpha and the Hebrew Aleph are rather overworked, you

might choose the Syriac equivalent Olaf. In this case the rose by any other name will smell as odorless.

However you call it, this Alpha has the one eternal and immutable distinction, that it faces always the Future, intent upon a goal that is often unseen but lies always ahead, that it never looks back upon the Past, but presses forever on. So far as we can see, the Past has for it no existence whatever. It may indeed sound strange thus to speak of the Future as solely determining the Present, since we are so used to speak of the Past as the sole-determiner. And yet such is the unique form of inner experience. Peer as deeply and as fixedly as you will into the abysses of your own being, you shall always find therein that it is all and only the Future that determines and in a way creates the Present. At every instant the Past crumbles into nothingness under our feet and we flee from it as from a levee sinking into the Mississippi, while the eternal Future, like the eternal Feminine, draws us upward and on. Not merely, mark you, the immediate Future; in higher and higher consciousness, yea, even in sub-conscious depths the voice cries out from the wilderness of the far-beyond; the endless stretches of the ages-to-come catch up the call and plead with impassioned eloquence; the broad opening vistas of time-to-be resound with the hopes and fears, the aspirations and aversions of the race of man, of the heart of existence itself, and these, yea, these alone it is that guide the bird of history through all her far-homing flight.

We may say then that it is To-morrow and not Yesterday that makes To-day what it is. In itself it is no more and no less plausible that the Future than that the Past should determine the Present; but the undeniable fact is that the determinant is the Future and not the Past. The Future and the Past appear as two aspects of the timeless Now, which stands related to them much as an algebraic expression stands related to its endless trains of integrals

and derivatives. If you have given an algebraic expression, as the square root of z, you shall find it Janus-faced, looking two opposite ways, and you may ask what are its derivatives and what its integrals, the answer being an indeterminate series of each. To take a simpler example, and at the same time to get another view of the matter, if you have given any set of numbers or symbols as 2, 3, 5 and are asked to combine them according to fixed rules, as by multiplication, the operation is called direct, the result is just one thing, namely, 30. But if you have given this result 30, and are called upon to determine whence it came by multiplication, the answer is again definite but is not unique. It might be 2, 3, 5 or 2, —3 and —5, or —2, 3, —5, or —2, —3, 5. In general the inverse operation has a multiple result, where the direct has a single result. We all know that the equation of second degree has two roots, while that of third degree has three, and so on. The problem of solving such an equation is an indirect or inverse problem. Similarly the universal Alpha or Reason is in each case single, whereas the Cause in the Past might be any one of many. Likewise the problem of the Past is such an inverse problem, as for instance to trace back the history of the moon and to find when and where the earth and the moon were one and how they parted company and became more and more estranged, the problem to which Geo. H. Darwin and later T. J. J. See have consecrated so much patience and labor and insight, and with such widely discrepant results. But the problem of the Future is direct and its answer is unique. Only *one* total aspect of creation will be presented to-morrow at noon; whatever it may be, the total aspect will be unique. No two equally justified forms of the same event will or can present themselves, like the two roots of a quadratic equation.

Here then are the wide world-views contrasted. On the side of matter, of cause and effect, the universe is one

immeasurable Memory. On the side of mind, of purpose and aim, it is one unbounded Hope. According now as the accent falls on the one or the other of these, we have this or that system of philosophy, and temper of culture and type of civilization. During the marvelous nineteenth century, the emphasis fell with a heavy and heavier stroke upon the Past. The key-note of this wondrous orchestration was given by Goethe in his deep-thoughted oracle: "The question for natural science is not what use have oxen for their horns, but how did they come by them?" Here all reference to the future is ruled out decisively; the forward gaze of mind is denied all recognition, the category of purpose is struck out of our thinking. The only question is one of cause and effect; the Laplacian intelligence builds up backward, backward forever, and forward interminably, but notice wherewith it builds. Only with the ashes of extinct volcanoes. Never at any point can it insert purpose or aim or meaning into its sublime construction; never can it even raise, much less answer, the question, *Why?* There was in fact no why, no reason for aught in this endless history. When under its all-conquering analysis a far-off temporary halting-place is reached, what then do we find? Naught but one all-embracing incompressible frictionless or perhaps subfrictional ether, curdling here and there into atoms or electrons. I leave out, of course, the more recent theories of relativity and of quanta, which no way impair the foregoing statements.

And now when this same Laplacian intellect attempts to construct a Future, what can it, what must it create? Only an inverted replica of the Past, wherein there neither is nor ever can be any purpose or aim or meaning, even unto the ages' end. On, on eternally the atoms, the electrons, the quanta whirl like a dumb dance of insensate demons, but at no point is there a vestige of any *value*,

UMI

at no point is the pull of the Future admitted, everything is deduced with mathematical rigor from the aboriginal push of the Past. And what becomes of consciousness, of the psychical in all its forms, with all its concomitants and derivatives of pain and pleasure, of desire and will, of instinct and reason, of thought and feeling, of good and bad, of right and wrong? Of everything in fact that has any meaning or value in the life of the world? Ah well! This consciousness is to be sure a little puzzling. Since it can never be explained as a phenomenon nor stated in terms of mass and motion, suppose we call it an epiphenomenon and let it go at that. In any case it does not amount to much, it does not last long; with all its kith and kin it is only a sporadic phosphorescent gleam in the infinite dark of time on the silent-rolling surge of matter, such as the voyager admires at midnight while his keel is furrowing the equatorial ocean. What if the earth should have been and continue to be inhabited by this intruding conscious or even subconscious soul for 40,000,000 of years? That need not disturb the serenity of the materialist who reflects that 100,000,000 of years are not even a drop of the bucket in comparison with the dead wastes of endless ages that stretch unvexed of any soul before and after. Rejoicing in these boundless Saharas he may tolerate however grudgingly the thin line of the Nile of consciousness and subconsciousness that lies across them.

Uncompromisingly as I reject this whole scheme of naturalism, let me not for a moment be thought as questioning its great significance, or even its complete justification as a partial and provisional interpretation of the course of history. It is only as a final and complete interpretation that we must condemn it totally. The immeasurable moving picture that the soul makes to itself of its own experience and of the Universal-Soul experience in which it shares and which it projects upon the screen of the

Past, must be described and can be described only in terms of mass and motion, or as Hertz would say, in terms of space, time and mass; it must be understood and can be understood only under the category of cause and effect. We bid then the physicist and the biologist God-speed in their high emprise, even though they confound our intelligence with their new concepts and swamp our language with their new terms. But we should remember and never forget that it is a picture they are dealing with, a shadow of the psychic realities, and not the perfect essence thereof. Let them study and explore ever so profoundly the laws of nature, but let us never fail to keep in mind that the laws of nature are the thoughts of mind, that they are universal and objectively valid only because the nature and therewith the thought of mind remain in broad outline the same for all men, for all the living, who differ from one to another much as two consecutive curves of the same family, enveloped by the same curve; as two circles that intersect each other with centers only just apart.

Bearing this in mind we hail with pride and joy every new conquest of science, every new concept or theory that serves to set in more perfect order the wondrous picture called the world of sense, whether it be Darwinism or Mendelism, whether vitalism or mechanism, whether electrons or quanta or the relativity of time and space. Yea, we shall behold unperturbed the removal of all things that can be shaken, well knowing that the things unshakable still remain. Moreover we shall perceive clearly that it is a false antagonism between the causative and the teleological conceptions of the universe. Willingly we surrender the world of matter to the despotism of the Past, to the tyranny of causality, to the blind predestination of the primal Push. For we know that this world is only a kinematographic representation of the eternal life of the spirit, the only ultimate reality. Willingly we admit that there is

no end nor aim nor purpose in the blinding storm of the atomic world, for we know that the Kingdom of Ends is within us. It is in the conscious and no less in the unconscious life of the soul that we find the Future sole-reigning, that we behold unveiled the face of the everlasting Striving, that we feel the pull of the increasing purpose of the universe.

From this point of view we shall be able to solve many antinomies, to reach out the hand of sympathy and friendship to warring champions of opposing doctrines. In the initial number of the new scientific quarterly, *Bedrock,* we find a powerful plea for Darwinian natural selection as against the *élan vital,* the life-urge of the Bergsonian theory. The author, Professor Poulton of Cambridge University, attempts to test the two views by two crucial examples, especially by that of the mimetic colors of insects, of which he has made a profound and exhaustive study. He reaches the conclusion that the facts in the case can be understood only in terms of natural selection, of the survival of the fittest, of the successful propagation of certain insects that by some purely accidental spontaneous variation in the markings of their wings secured a more protective coloration than their less fortunate fellows.

Now it is no intent of mine to take up any glove in defense of M. Bergson, who certainly has enough eager disciples of his own, whom we all admire even though undazzled by the sudden outburst of splendor in his halo. But I wish to note that Poulton's argumentation, even if accepted at its face-value, glances harmlessly by the position we have sought to make clear. We have no interest whatever in denying the agency of natural selection either in this case or in many others, where it seems to have been more certainly active. In fact it would appear that such selection could work far more effectively on the finite mutations of De Vries than on the infinitesimal variations of

Darwin. One thing, however, is certain. Though natural selection may and even must play a large part in the *survival* of the fittest, it can play no part at all in the *arrival* of the fittest. Even Poulton must speak of "spontaneous variation." It is not necessary to press the sense of the word "spontaneous." Let us grant that it is used only in lack of some better word, that Poulton does not mean that the organism willed or desired or even tended to vary, but only that it varied through unknown mechanical causes. Let us take the extremest case and make the largest possible concession, namely, let us think of what you may let me call the universal life-front, the total advancing aspect of life at any moment, as a huge surface, a sphere surface, for example, and as budding or putting forth variations at every point in every direction; and let us suppose some of these struck down, destroyed, but others preserved to form a new life-front with new variations every way at every point, some preserved, some destroyed, and so on without end. We cannot represent more vividly or more favorably this Darwinian doctrine. But does not any one see that the budding or varying every way at every point remains unexplained? That we have merely described the way *in which the process goes on,* but have not even tried to state the nature or reason of the process itself? That we have only stated how A turns into B, and B into C and so on, but have left untouched the questions, *Why* was there any turning at all? *Why* was there any growth? *Why* any inheritance? *Why* any variation? None of these questions are put, hence none of them are answered in the foregoing scheme.

But Poulton may say, they *can not* be answered, they *should not* be put, in any scientific study of the nature process. Granted, as long as that process is conceived and stated in mere terms of mass and motion. Nevertheless the questions are actually put, whether answerable or not; they are in fact insistent. No rational being can escape

putting them except by refusing to think. The fact then that they are not answerable, nay more, the fact that they cannot even be properly put in the system of matter, of mass and motion, is a decisive demonstration that such a system can never be ultimate in human thinking. However excellent the service it may render as a preliminary and preparatory organization of thought, it nevertheless finds no place within itself for the question Why? no place for the concept of reason, of end, of aim, of purpose. But all these are native to the very thought-process itself by which the system is upbuilded. They can not be stamped out of existence, they can not be disregarded; expel them with a pitch-fork, they instantly return. You can no more get rid of them by thinking than you can think away thought itself.

We must then yield them an eternal abiding place. In terms of them we must construct our theory of the universe, in view of them we must direct our life. Since they cannot be found in the objective world of atoms, of electrons, of quanta, of time and space, there remain at the bottom of our system only the immediately perceived or implied inexpugnable verities of our inner psychic or spiritual experience, whether conscious or unconscious. These are the things that cannot be shaken, these are the living stones in the temple of our world-theory. It may be—indeed, it certainly is—incomparably more difficult to construe the universe as a system of reason and purpose than as a system of cause and effect, nevertheless we cannot finally evade the task, and surely it is noble and inspiring beyond measure. Unto this task it is that the twentieth century is invited, and "along the line of limitless desires." It is in fact an awakening to a new and higher form of self-knowledge than Spirit has hitherto attained, a distincter recognition of the Future as the matrix of the Present, a pursuit more conscious than ever before of the flying goal of history. We dare reverse the homely aphorism of Goethe and affirm

that, without abandoning the causal view of the Past, we must turn to the teleological view of the Future, we must seek to understand the total present as a system of living and striving instincts, where instinct itself in Hartmann's phrase "is the (conscious) choice of means towards an end unconsciously chosen." So then it is the end, the aim, that rises before us as guiding star in this twentieth century interpretation of history, yea, we may indeed proclaim, "The Kingdom of Ends is drawn nigh." It is not strange that the vision of the poet should outrun the perception and reasoning of the savant or even the philosopher, nor that we should find all we have been striving here to express already adumbrated in the great Tennysonian quatrain:

> "That God, which ever lives and loves,
> One God, one law, one element,
> And one far-off divine event
> To which the whole creation moves."

WILLIAM BENJAMIN SMITH.
TULANE UNIVERSITY.

FICHTE'S CONCEPTION OF GOD.

IN the year 1799 Johann Gottlieb Fichte, one of the most renowned and best beloved professors in the University of Jena, and in all Germany, resigned the chair of philosophy on account of difficulties which grew out of the charge that his philosophical teachings were atheistic in tendency. The story of Fichte's *Atheismusstreit* is long and involved, and a sad commentary on the unwisdom of the wise. There is little doubt that both parties to the controversy were somewhat lacking in judgment: if either of them had adopted a more conciliatory attitude, the matter might have been settled without the University losing one of its profoundest thinkers and most inspiring teachers, and Fichte's brave spirit might have been spared much suffering.

Our present concern, however, is not to recount the history of this unhappy controversy, but rather to examine, for a little while, that doctrine of Fichte's which some of his contemporaries denounced as atheistic. In order to understand Fichte's idea of God, we must begin by learning something of the way in which he conceives human life. For in spite of the common opinion that his philosophy is highly abstract and has little or nothing to do with the actual thoughts and feelings of every-day men, the truth is that its basal ideas were gained by patient reflection upon the facts of human experience, as Fichte saw these facts. There have been, perhaps, philosophers and

UMI

theologians who have believed that you can somehow prove the existence of God by the skilful manipulation of carefully selected concepts. But Fichte was not one of these. On the contrary, he was profoundly convinced that if we are to discover God, we must look for him, not in the fine-spun speculations of philosophers, not in the trenchant arguments of theologians, but in the actual life of men and women. Now the aspect of human life that seems to Fichte the most prominent is that it is always a striving to attain something or other. Man is essentially a being who strives, who has desires, purposes, ambitions, ideals, and who is continually seeking to realize them. But, being a philosopher, Fichte is not content with noting this obvious fact. With that deep-rooted instinct for generalization which makes a scientist or a philosopher out of a mere man, he asks himself whether all these various desires, purposes, and ideals may not be regarded as so many forms of *one* ideal. What is it that in all your striving you are seeking to attain? What is the one all-embracing ideal that you would fain make actual? It is, says Fichte, the ideal of unity.

To some of us it may seem strange to say that all human effort can be regarded as a striving after unity. And it may therefore be worth our while to pause a little in order to consider the matter more carefully. Let us look first at the nature of intellectual endeavor. We shall agree, I think, that in one important sense, at any rate, the search for knowledge is a search for unity. One of the most common descriptions of the aim of science identifies it with the effort to discover an underlying unity in the diversity of phenomena. A mere fact, unrelated to the rest of your experience, is not knowledge, is at best only the crudest beginning of knowledge. Really to know the fact, you must understand its significance; you must see it in its relation to other facts, must bring it into unity with them.

UMI

For example, men did not understand the movements of the heavenly bodies until Newton, with his marvelous faculty for divining unity in happenings apparently most unlike, gave to the world the law of gravitation, until, that is, he helped men see that the circling of the planets about the sun and the falling of the apple to the ground exemplify the working of the same force. The magnificent courage that with one leap reached the outermost bounds of space and dared to say that the force of gravitation, which others before Newton had vaguely recognized as prevailing upon the earth, is a universal force, binding together all parts of the cosmos—the courage that dared take this leap won for men so great an extension of knowledge just because it enabled them to unify so many facts of experience.

There is another sense in which we may say that the striving after knowledge is a striving for unity. Fichte tells us that all intellectual endeavor is an effort to bring about a harmony of subject and object, that when you seek to know anything you try to make yourself one with it. Really to know the nature of something other than yourself means to bring yourself into such intimate relations with it that you may almost be said to have become one with it. Furthermore, Fichte says, you try to effect this harmony by subordinating yourself, as it were, to the object.[1] If you would know an object, you must submit yourself to it, must follow its leadings, must sink yourself in it. In putting the matter thus, Fichte is not doing justice to that more active aspect of the knowing process in which we prescribe conditions for nature, in our experiments, and ask leading questions of her. But even here our activity is preliminary to the more submissive attitude that Fichte is describing. In experiment we arrange, indeed, the conditions under which we are to observe; but in the observing itself we must lay outside our preconceived

[1] *Sämmtliche Werke*, Vol. IV, p. 2. Berlin, 1845-1846.

notions of what we are to see, must become for the time a mere seeing, must—in a highly significant sense—lose ourselves in the object.[2]

Thus in at least two senses we may say that the search for knowledge is a search for unity. But the quest of unity is characteristic of other aspects of life besides that of intellectual endeavor. All that we ordinarily call the practical life of man, as Fichte also points out, is dominated by the effort to bring about a harmony of subject and object. In this case, however, he tells us, we achieve the harmony by compelling the object to conform to the subject.[3] Whenever you attempt to secure any practical results in the outside world, what you are really trying to do is to compel that which is not yourself—some external object, some force of nature, the will of another individual—to conform to your will, to become a medium for the realization of your purpose. Now, the purpose that you wish to see accomplished is, for the time being, yourself; and when you try to realize it through any external means whatsoever, you are trying to bring a not-yourself into agreement with yourself, to effect the harmony of subject and object by making the object conform itself to the subject.

Yet again, when we look at the esthetic side of life we see the same striving to realize the ideal of unity. And this is true both of the creation and of the appreciation of works of art. The artist seeks to mould his objective material—words, tone, color, whatever it may be—into the form which shall express his purpose, seeks, that is, to make the

[2] The more active aspect of the knowing process has received much emphasis in recent discussions of the nature of judgment. There is no question of its importance. But the other fact, to which Fichte calls our attention,—the fact that all judgment involves a submission, on our part, to something beyond the will of the individual,—is certainly no less important and is today particularly in need of emphasis. I have discussed the question at some length in my article on "The Philosophy of Fichte in its Relation to Pragmatism" (*Philosophical Review*, Vol. XVI, pp. 488 ff.)

[3] *Loc. cit.*

object conform to the subject. On the other hand, the ideal of the appreciation of art, as distinguished from its creation, is the losing of the subject in the object. The sense of *me* and *not-me* disappears; the soul becomes one with the beautiful object.

Once more, we may say that moral progress is a progress toward deeper unity. All great moral and religious teachers have realized, more or less clearly, that the moral task of the individual is to effect a harmony of the warring impulses of his nature, to weld into one the "two souls" which dwell within his breast. That ruling of the spirit which, the wise man tells us, is a greater achievement than the taking of a city, means nothing other than this unifying of the conflicting tendencies of our nature. Similarly, when we conceive morality, not as a matter of the inner life of the individual, but as a matter of his relations with his fellow-men, we see, again, that progress means the growth of unity. Fichte often calls attention to this aspect of the question. Human progress, as he conceives it, includes, indeed, all the factors that we have mentioned: the unifying of isolated phenomena through the discovery of their underlying principle; the sinking of the subject in the object in esthetic contemplation and in scientific observation; the compelling of the object to conform to the subject in practical achievement and in creative art; and, finally, the unifying of the warring impulses of our nature in the inner moral life. But it also involves the growth of unity within the social organism. The ideal for the race, Fichte tells us, is that "all individuals" shall be "included in the one great unity of the pure spirit."[4] And spite of the selfishness and jealousies that separate man from man, we are coming, slowly but surely, to see that in their deepest nature all men are one, that the individual can find his true life only as a member of the whole.

[4] *Op. cit.*, Vol. I, p. 416.

What Fichte maintains, then, is that human life, in all its important aspects, may be regarded as the striving to realize an ideal of unity. This ideal, as actually conceived by men, has indeed many forms. Oftentimes our conception of it is painfully crude. The capitalist who is so absorbed in carrying out his own magnificent plans that he takes no thought either for the rights or for the needs of others is guided, indeed, by the ideal of unity, but by a very faulty conception of it. He thinks, forsooth, that the self to which the not-self is to be conformed is merely his own little individual self; that it is *his* purposes, *his* plans, *his* ideals, which his life was meant to realize. But he who looks deeper into the meaning of things discovers something quite different. He sees that the self whose realization is demanded is the wider self in which all one's fellows are included. He sees that the ideal unity, which is the true goal of human endeavor, while it has indeed certain individual aspects, has also a universal aspect, an aspect of inclusiveness, that

> "All are needed by each one,
> Nothing is fair or good alone."

We have been a long time in coming to Fichte's conception of God; but we have been coming to it all the while. For this ideal of which we have been talking is the "Unknown God" whom Fichte declares unto us. God is that ideal of unity which, through its many wanderings and errors, humanity is striving to reach. He is the goal—far away and dimly descried—toward which, through all the progress of the ages, the spirit of man has been struggling. The perfect harmony of all individuals with one another, which includes the harmony of each individual with himself, is the ideal that we are all trying to realize; and this ideal is God.

At this point I hear some of my readers saying that it is no wonder that many of Fichte's contemporaries accused

him of atheism. If God is only an idea in our minds, a mere man-created concept, then there *is* no God in the sense in which devout men, through all the ages, have believed and taught. A mere ideal, born of our dissatisfaction with our present estate, is this what Fichte offers us as a substitute for the living God in whom our fathers have trusted? But I have given as yet only a part of the doctrine. Fichte does not for a moment mean that God is simply our ideal. If we are to find God anywhere, we must, indeed, find him in human life; but the God whom we find in human life is something more than a man-made concept. What this something more is, we must now try to see. And first we must ask what is meant by an ideal. In the most common use of the term, an ideal is something which we regard as having value and which we are striving to attain. But it is really more than this. It is something that furnishes us with a standard, by the help of which we may estimate the worth of certain aspects of our life; we determine the value of the various things with which we come into contact, by their relation to our ideals.

Now standards of value may be either relative or absolute. Anything whatever which I regard as having value and which I use in measuring the value of other things is a relative standard. In and of itself it may have no worth; but I believe it to be worthful—or I assign worth to it for purposes of convenience—and use it in estimating the worth of other things. Money is an example of such a relative standard or relative value. In itself it has no worth; but we take it as valuable and measure the value of other things in terms of it. An absolute standard, on the other hand, has intrinsic worth. Whereas a relative value is beautiful or good or true *for us*,— that is for one or more individuals,—an absolute value is, as we say, *really* beautiful or good or true; that is, it has

worth quite apart from the question whether men deem it worthful or not.

Now an ideal, in the ordinary use of the term, implies nothing more than a relative value. My ideal is something which I conceive as excellent, which I strive to attain, and which I use as a standard. It may be no more than this; and if so, it is simply a value *for me*, a relative value. But it is clear that if there be absolute values, my ideal *may* also have an absolute aspect—may be, that is, a reflection, in my individual consciousness, of something that has worth in itself. It may be, for example, that the type of character that I am striving to attain, not only seems to me good, but is really so. Completely good, of course, it will not be. Our ideals are never perfect; hence, the change in them as we progress. But partially, incompletely, my moral ideal may mirror the absolute value. Similarly, the conception which the artist is trying to embody in sensuous material may not merely seem to him beautiful, but may really be beautiful, may be the reflection, in his consciousness, of the absolute beauty.

We may now return to Fichte's conception of God as the ideal toward which humanity is striving. In describing him thus, Fichte does not mean that he is simply an idea of something which men regard as excellent, which they try to attain, and which they use as a standard of evaluation. God is indeed this, but he is something more. For the ideal, in this sense, *may* have only relative value, may be simply that which we regard as worthful. But when Fichte says that God is the ideal, or—to use one of his favorite phrases—"the Idea of the Ego," he means that God is the absolute value, that the goal which humanity is striving to attain is something which has in itself absolute worth. Fichte's God is not a mere idea in man's mind; rather is man's idea of God the reflection, in human consciousness, of the absolute value. But even this is not

all that is included in Fichte's conception. His God is not simply the supreme value toward which the world is striving, the infinitely distant goal of the world-process; he is also the moving force in this process, the indwelling principle through which alone the striving is possible. This is an important point in Fichte's doctrine. He conceives of God as the spiritual principle that is at work in all finite consciousness and is the motive power in all progress. This spiritual principle manifests itself to us in our ideals; every high aspiration that the human heart has cherished is a revelation of it to the consciousness of man. Not only so, but the very existence of man and of the world in which he finds himself is grounded in it. Human beings exist in order that in and through them the Idea of the Ego may become actual. The history of the race is simply the record of this actualization: it is the becoming real of an idea, the embodiment of value in concrete existence. But the idea becomes actual, the value gains embodiment, not because there is an intelligence, other than itself, which conceives it and wills its realization, but because of its own vital power.

It is evident that Fichte's conception of the relation of God to the world is not the ordinary one. According to the popular view, God is regarded as a divine intelligence which has a certain ideal, which wills that this ideal shall be realized, and which directs the course of the world so as to accomplish its purpose. Fichte feels that to conceive of God as first forming a plan and then choosing means to its fulfilment makes of him a limited being, of much the same sort as ourselves, though, of course, wiser, more powerful, and more beneficent. For this conception we are asked to substitute that of an ideal which *realizes itself*, of a power which is working itself out in human history, but which is not to be thought of as a conscious being like ourselves, forming plans and trying to achieve them. God

is not a being who is conscious of the ideal: he *is* the ideal. Only, this ideal is more than an absolute value: it is also the indwelling force in the world-process. It is both the goal toward which the world is progressing and the motive power in the progress.

It has sometimes been suggested that Fichte's conception, save for its metaphysical basis, has its counterpart in Matthew Arnold's "power, not ourselves, which makes for righteousness." This is fairly accurate, except that Fichte might object somewhat to the "not-ourselves" of Matthew Arnold's famous phrase. In a sense, the power that makes for righteousness is not-myself: that is, it is not "myself" regarded as the sum of my petty personal interests. But, Fichte would say, my deeper self, that within me which reaches out after all that is high and beautiful, is, indeed, but a manifestation of this eternal power. "The kingdom of heaven is within you." Or, in Fichte's words, "The idea of the infinite which we are to attain, hovers ever before us and dwells in the innermost depths of our being."[5]

But at this point an objection may be made. Can any one rest satisfied with this conception of God? Can we, even so far as our theoretical interests are concerned, be content to stop here? Can we rightly speak at all of a supreme ideal which is not an ideal for some consciousness? True, the ideal exists at any rate for *our* consciousness; but it is present to our finite apprehension only in part, not in its rich fulness. Must we not, then, posit an all-embracing consciousness, which conceives the ideal in its completeness and wills its realization? Or, to put the same objection in another form, is the conception of a spiritual force which is working itself out in human history, but which is not personal, a tenable one? If the force is not to be thought of as personal and conscious, must we not conceive it on the analogy of material energy?

[5] *Op. cit.*, Vol. I, p. 270.

It must be admitted that Fichte's theory contains grave difficulties, and there is some indication that he was more or less aware of them. But apparently he believed that any other conception of God is open to still more serious objection. The only other one that he discusses is the notion of God as a being quite distinct from the world, who is its creator and ruler. This conception he attacks with vehemence. To think of God as a being distinct from the world, who is trying to realize a certain purpose in the world, is to make of him, says Fichte, an idol, is to fashion him in the image of man. It is to conceive him as subject to all the limitations to which we are subject. And if we refuse to regard God as merely a more powerful man, we cannot attribute to him, Fichte thinks, personality and consciousness. For they imply limitation from without. But in denying that God is conscious Fichte does not mean that we are to conceive him on the analogy of physical force. "It is only with reference to the limitations" implied in the conception, only with reference to the *form,* he says, "that I have denied that God is conscious. As to the *matter*—I am trying to express the inconceivable as well as I can—as to the *matter,* the Deity is pure consciousness; he is intelligence, pure intelligence, spiritual life and activity."[6]

But if the only difficulty is that our ordinary conception of consciousness implies the notion of limitation from without, why may we not solve the problem by saying that God is a higher form of consciousness, which is free from the limitations that are characteristic of human consciousness? Why may we not describe him as an all-inclusive self, as the Absolute Spirit, in whom all human spirits live and have their being? This would be to take the path that many thinkers of the present day have followed. Why does not Fichte meet the difficulty in this way? There are

[6] *Op. cit.,* Vol. V, p. 266. The italics are mine.

some students of his philosophy who believe that he does, at least in his later works, the writings of his so-called "second period." Many who would accept the interpretation that I have given, as representing fairly well the doctrine of the first period, believe that in the second, which directly followed the *Atheismusstreit,* Fichte alters his position and begins to teach the doctrine of the Absolute Spirit. Throughout the writings of this later period, we find references to God's being (*Sein*), as distinguished from his existence (*Dasein*); and from the description that Fichte gives, it is not unnatural to suppose that by the unchanging, timeless *Sein* he means the perfect and unchangeable Absolute Spirit, and by the *Dasein,* the manifestation of this Spirit in the time-process, that is, in the life of men. For lack of space, I cannot enter into the considerations which prevent me from accepting this interpretation.[7] It must suffice me to say that, in my opinion, Fichte uses the terms *Dasein* and *Sein* simply to distinguish between the Idea considered as a force that is progressively realizing itself in human history and this same Idea considered in itself, quite apart from the fact of its realization. In the latter sense, the Idea is regarded simply as the supreme value; and values—as distinguished from their embodiment in actual existence—are timeless, changeless, perfect. Hence Fichte tells us that time and change belong only to God's *Dasein,* not to his *Sein.*

This, it seems to me, is the way in which Fichte's philosophy should be understood. But it must be admitted that the task of interpretation is by no means easy and that there is room for difference of opinion. And even if one is convinced, as I am, that Fichte did not teach the doctrine of the Absolute Spirit, one cannot say with certainty what

[7] The reader who is interested in them is referred to my monograph, "The Fundamental Principle of Fichte's Philosophy" (*Cornell Studies in Philosophy,* No. 7). See especially pp. 73-80; 83-88; 106-122. New York, The Macmillan Company, 1906.

were the motives that prevented him from accepting it. I suspect, however, that the chief one is to be found in his desire to keep close to the facts of human experience. The conception of God as Absolute Spirit represents him as perfect unity, complete, self-sufficient, all-inclusive. Now one trouble with this conception is that it is hard to reconcile with the evident lack of harmony among men. We may hope, and even believe, that we are working toward a genuine unity of all mankind; but it must be admitted that at present we are far from our goal. With the perpetual conflict that we see between human wills, with our outlook upon society continually revealing to us a mass of warring purposes and efforts, how can we suppose that all these human lives are integral parts of one complete and perfect life, that all their purposes are harmoniously united in one supreme purpose? It may well be, then, that one great reason which keeps Fichte from believing in an all-inclusive consciousness is his steadfast purpose to make his philosophy square with the facts of experience. The world, as we find it, does not very obviously suggest the actual inclusion of all individuals "in the one great unity of the pure spirit." And accordingly, Fichte declares that this unity is "unattainable ideal, final purpose which will never be [completely] realized."[8]

There is indeed one way in which we might try to meet this difficulty in the conception of the Absolute Spirit; namely, by saying that the conflict in human purposes is only apparent, that in their essence all men are one. But this only plunges us into greater difficulty. The doctrine which thus identifies God with the whole of reality and conceives him as perfect unity, complete, eternal, above all time and change and defect, seems to rob human struggle and aspiration of their deepest significance. For if reality

[8] *Sämmtliche Werke,* Vol. I, p. 416 and note. Cf. p. 101, The "highest unity" is not "something that *is,* but rather something that *is to be,* and yet *cannot be,* produced through us."

is even now a perfect unity, the ideal is already actual. And what, in this case, are we to make of our human consciousness, with its incompleteness and its lack of harmony? Apparently we should have to say that the incompleteness, the evil, is mere appearance, illusion. And in like manner there seems to be no place for aspiration and effort and no meaning left in the conception of progress. If the supreme consciousness, as perfect harmony, actually exists and if it is really inclusive of all finite consciousness, we must suppose that all striving is unnecessary and all appearance of progress illusory.

We can see, then, that there is some reason why Fichte might hesitate to accept the doctrine of God as Absolute Spirit. He is convinced that philosophy is nothing more than the making intelligible of the facts of human experience. He is also profoundly convinced of the moral significance of life. He rejects the conception of the Absolute Spirit, probably because it seems to him to be at variance with some of the central facts of experience and to rob our moral life of its deepest meaning. And rejecting it, he turns to what he apparently regards as the only alternative worthy of consideration and conceives of God as a spiritual force which is working toward unity, but which is not itself, strictly speaking, a conscious being. There is, indeed, a sense in which it may be called conscious and personal. It is conscious in every pulse of our inner life, in the thought and action of every individual; it is personal in that it embodies itself in persons. But it is conscious and personal only in the more or less separated human spirits, and thus is not *a* consciousness, *a* person.

This appears to me to be the doctrine that Fichte clearly teaches in the first period, and I can see no sufficient reason for thinking that his theory was materially altered in the later writings. It seems, however, to be a more extreme position than his general principles require him to

adopt. The human individual is conscious, and yet is far from being perfect unity. He is many selves, and yet, in a sense, one self, though not a complete and perfect one. Why, then, may we not say that God, too, is a self, though not a perfect self; that his unity, like ours, is incomplete, but ever developing; and that the more fully men become one, the deeper and richer is the unity of the divine consciousness? This would avoid the difficulty involved in thinking of God as a power which is spiritual and yet not conscious. At the same time it would be free from the most serious objections to the doctrine of the Absolute Spirit: it would leave room for striving and aspiration and would give the conception of progress the significance that we demand for it. That this procedure would have difficulties of its own must be admitted. But on the whole it seems less open to objection than the position which Fichte, as I have interpreted him, actually holds. And from one point of view, at least, one might urge that it harmonizes better with his general principles. For the Absolute Spirit, although it is not, according to Fichte, an existing reality, is the infinitely distant goal of the world-process. And if, at the present moment, this ideal of one perfect, all-embracing consciousness is, in a partial and imperfect way, made actual in the world-process, it would seem that reality must be even now a self, though an incomplete and imperfect one. From this point of view we might naturally expect Fichte to say that God exists as an imperfect, but developing, consciousness. But explicit statements in his earlier works seem to make it clear that he does not hold this view in the first period; and, as I have said, I can find no sufficient ground for believing that his theory suffered any notable change in the later writings.

One thing still remains to say of Fichte's doctrine of the divine nature. Whatever difficulties there may be in it, he urges, as a strong point in its favor, that if we adopt

his conception we may be perfectly sure that there is a God. The absolute certainty of the foundations of religious belief is a cardinal doctrine of Fichte's philosophy. If you conceive God as a substance, a being, a person, a consciousness, it is always possible, he says, for you to raise the question, Is there any God such as I conceive? But if you think of him as the "moral world-order," which is gradually building itself up in and through our right-doing,[9] the reality of God cannot be doubted. It is true that Fichte offers us no proof even of this God. But what he maintains is that we need no proof. We prove the less certain by the more certain, and there can be nothing more certain than God. For his reality is immediately revealed to us in our own consciousness. Who does not find him there cannot hope to find him anywhere. The aspiration which reaches out beyond anything that you have attained, or have seen attained by your fellow-men, bears indubitable witness to the living and working moral order, to which we give the name of God. Belief in God, Fichte declares, is not, strictly speaking, a theoretical matter at all; it is simply the expression of the fact that one identifies oneself with the moral order, that one dedicates one's life to the realization of the Divine Idea. The man whose highest purpose is to make actual, so far as in him lies, the ideal that speaks within his breast—to him it never occurs to doubt of God. For within him *is* "the power which makes for righteousness," and he knows its reality in the same immediate way in which he knows the reality of himself. If by "God" you mean the moral world-order, the belief in God is the most certain of all beliefs. But the assertion of his reality is, in Fichte's own words, "not a wish, nor a hope, nor a considering and balancing of reasons for and against, nor a free resolve to assume something the opposite of which one regards as possible. The assertion [of the moral world-

[9] *Op. cit.*, Vol. V, p. 185.

order] is absolutely necessary, if you presuppose the resolve to obey the law that speaks within you. It is immediately contained in this resolve, is, in fact, the resolve itself."[10]

It is not a part of my purpose to vindicate the theory of the nature of God which Fichte offers us nor to weigh the arguments for and against the various conceptions that our study has suggested. What I have tried to do is to describe the doctrine that Fichte actually held. How we estimate it will depend in large part upon our temperament, our habits of thought, our own intellectual, moral, and spiritual needs. This one thing, however, in justice to Fichte, we ought to say: that whatever objections there may be to his theory, it lends itself to a profoundly religious conception of life. The essential teachings of Fichte's philosophy of religion are that we know certainly and immediately that there is a God; that he is not far from every one of us; that the whole world-history is a revelation of his nature; that every high ideal of which we are conscious is his voice speaking within us; that to be one with him is at the same time our supreme duty and our highest blessedness. Surely, a philosophy that finds the deepest meaning of life in the thought that this little human personality may be—if we will have it so—a vehicle for the self-manifestation of the Divine Idea, is a truly religious philosophy. For the surrender of the self to the domination of the Idea, which speaks within us as our ideal—what is it but that oneness with God, that "life of God in the soul of man" which devout spirits, in all ages, have held to be the essence of religion?

ELLEN BLISS TALBOT.
MOUNT HOLYOKE COLLEGE, South Hadley, Mass.

[10] *Op. cit.*, Vol. V, p. 183.

TRAGIC EFFECT IN SOPHOCLES.[1]

ANALYZED ACCORDING TO THE FREUDIAN METHOD.

THE effect which tragedy produces upon its auditors is too profound and complex to be explained with adequacy by a few formulæ. Its appeal is too many-sided and the aspects of our nature which it brings into play are too obscure and inarticulate. But the inquiring mind will not rest in the presence of mysteries. Every labyrinth is a challenge to exploration. Tragedy in particular is an attractive field of investigation, and we may enter upon our journey with all the better hope of some slight success, because certain modern psychologists seem to have thrown a little light upon our path.

It is characteristic of tragedy to depict a great crisis in the life of a great soul. This is well exemplified in the dramas of Sophocles. His heroes and heroines are cast in a genuinely heroic mould. They are usually members of royal houses and proud of their lineage. They are noble in nature, vigorous in will, violent in passion. They are not required to be morally perfect. Indeed Antigone startles us by her harshness to Ismene, and we can hardly forgive the aged Œdipus for the terrible curse which he lays upon his sons. Such incidents were doubtless not so offensive to the ancient Athenians as they are to us, for their moral ideals involved far less emphasis on pity and charity than

[1] One of the Bowdoin Prizes for essays by graduate students of Harvard University was awarded to this essay in May 1911.

UMI

ours. Yet the popularity of Euripides, who was a contemporary of Sophocles's later years, shows that the public was also susceptible to works of a decidedly more humanitarian temper. Other faults, which were certainly reprehensible from the Greek standpoint, were defiance of the authority of the state, scepticism with regard to soothsayers and oracles, and impiety toward the gods. But Sophocles's protagonists, whatever their faults, are never deficient in that energy of will and passion which lifts them above the common level of mankind and gives them a certain grandeur and sublimity.

Characters such as these are brought face to face with some great crisis which often results in the ruin of the protagonist. Suicide, burial alive, blinding followed by exile —these are the events in which some of the dramas culminate. But in the Electra and the Philoctetes the protagonist is saved, not ruined. Most theories of tragedy are concerned chiefly with the former type and perhaps unduly neglect the latter.

The relation of the hero to his doom has been made the subject of profound reflection by many philosophers and critics. It seems to offer inexhaustible material for psychological and metaphysical analysis and for ethical and religious interpretation. I cannot enter into the opinions of later philosophers, but it is desirable to give a brief résumé of the conceptions which the Greeks themselves seem to have embodied in their tragedies.

The Greek tragedies were based on ancient legends. At the time when these legends were taking shape two notions were prominent in the popular consciousness, of which one is the doctrine of the envy of the gods. Disasters which overtake the powerful and prosperous make a vivid impression on the mind. The Greeks felt that the gods must begrudge to man a power and happiness that suggested a comparison with their own. It seemed natural

that the gods should remind man of his mortality and feebleness by bringing disaster upon him. The other notion was the conception of a curse which rested upon a whole family and descended from father to son, begetting fresh crimes and bloodshed in each generation. These notions were embodied in the legends.

As moral ideals were gradually raised the legends were modified so as to give expression to the new ideals. We no longer find prosperity directly incurring the divine displeasure, but prosperity breeding insolence or excess and that in turn incurring disaster. The notion of an ancestral curse is not discarded, but its arbitrariness is mitigated by showing how the evil deeds of one generation provoke the next generation to crime. It is in approximately this form that we find the legends first embodied in the drama. But the art of the dramatists carried the development still further, adding new motives or developing those already latent in the legends. Character is so depicted that the transgression seems to flow naturally from it, and the action so handled that the disaster seems to flow naturally from the transgression. Yet the transgression that incurs disaster must not be such as to alienate the sympathy of the audience. It must be great in order to account for the ruin that follows, and small in order to retain the sympathy of the spectators. This paradox is well solved by the transgression which has a double aspect. It may be slight from the standpoint of the doer, being committed without intent or in ignorance, while it is serious from the standpoint of the observer. Such is the deed of Œdipus, who slays his father in a quarrel on the highway, not knowing who he is. This was subjectively a justifiable retribution for injury, but objectively it was parricide. The development of this solution of the original paradox culminates in the far more profound paradox of the conflict of rights. Thus Antigone stands for a sacred duty to the dead in opposition to Creon

who stands for the inviolable authority of the state. Such a conflict is most poignant when it occurs not between two persons but within the heart of a single person, as when Neoptolemus is drawn in one direction by his loyalty to the cause of the Greeks, and in another by his love of honesty and his pity for Philoctetes.

Such then are the typical materials of tragedy. Let us now see how they are employed by Sophocles.

In the "Œdipus Tyrannus" we find a hero keenly conscious of his sagacity, his strength of will, and his authority. He is intensely a king, endowed with the capacity to rule and glorying in the exercise of his power. He has won his kingdom by his own skill in answering the riddle of the Sphinx and holds it by his ability as a ruler. By the course of the drama the terrible secret of his birth, his parricide, and his incestuous marriage is gradually brought to light. Point by point the proofs accumulate and wring from him an unwilling assent. When at last all is clear, the violence of his passion is such as only a mighty nature can feel. He blinds himself that he may never again see the sights that would recall his glory and his shame, and he is never more sublime than in his desolation.

His own guilt in all this is slight. When the oracle announced that he was to slay his father and marry his mother, it was no sin for him to shun the city of his supposed parents. At the crossroads he was perhaps too easily provoked to vengeance, but he had no intention of parricide. It was surely no sin to free Thebes from the oppression of the Sphinx, to accept the kingdom, and to marry the widowed queen. It was natural that a man who had thus attained prosperity in spite of oracles should pay small respect to them. Such was his career subjectively viewed, but objectively his vengeance at the crossroads was parricide, and his marriage was incest; his wretched fate is the appropriate recompense for those deeds.

In the "Œdipus Coloneus" we find a softer atmosphere. Œdipus has assumed something of the saint, but he is still predominantly the hero. He is still suffering the consequences of the deeds depicted in the former drama. He is a wanderer dependent on scanty alms, but "his afflictions and the weight of years teach him contentment." The gods, moved by his original good intent and his long penance, are about to release him from misery. He is to depart from life, not by any ordinary death, but by a mysterious translation to the other world. He is thus set apart from other mortals as a special object of divine solicitude and invested with a sort of sanctity. The crisis which he meets is the attempt of his sons and Creon to use him for their purposes. The vigor of his resistance and the vindictiveness of the curse which he lays upon his sons reveal a spirit untamed by adversity and unsoftened by the prospect of release. His departure from life is a solemn triumph in his release from suffering, in the blessing his presence is to bring to Athens, in the doom that awaits his persecutors, and in the special favor shown to him by the gods.

Ajax is a supreme embodiment of soldierly qualities as Œdipus is of kingly qualities. His valor leads him to such a pitch of self-confidence that he scorns the aid of the gods. When the Atridæ ignore his pre-eminence in valor by awarding the arms of Achilles to another his unquenchable fury is aroused. He sets out to avenge himself on the Atridae and Ulysses, but a divine power turns his attempted vengeance into mockery. When he awakes to his situation life has no more value to him. He recognizes that the gods are too strong for man to resist, but he will not call them just. He recognizes that the Atridæ must be obeyed, but he summons the Furies to pursue them without respite. He refuses to prolong his life without honor, tenderly makes such provision as he can for the future of his little son, and then betaking himself to a lonely spot

on the seashore he falls upon his sword. His death is no triumph for his enemies, but a release which he himself secures. The Atridæ seek to deprive his body of honorable burial, but the memory of his valor and magnanimity lives so vividly in the heart of his former foe, Ulysses, that that disaster is averted. And with this posthumous victory the drama ends.

In the "Trachiniæ," Deianira is depicted as the devoted wife of Heracles, eager to maintain first place in his affections, and resenting the presence in the same house of his new favorite Iole. She resorts to a charm which she had been assured in ambiguous words would bring it to pass that Heracles "should love no other woman more than her." This charm proves to be a fatal poison, and when she hears the news of its effect she departs without a word and takes her life. Heracles is brought in on a litter to wail out his physical agony before the audience and to curse Deianira. The story of her death convinces him of her innocent intent. He draws a vivid contrast between his former labors and his ignominious end and finally bids his retainers to take him to a mountain top and let him end his misery in fire.

The "Philoctetes" is a complex tragedy, involving three contrasted characters, Philoctetes, Neoptolemus, and Ulysses. The passionate Philoctetes, embittered by years of anguish, is set over against the cold and crafty Ulysses. Between them stands the noble-hearted youth Neoptolemus, to be played upon by both. Ulysses requires all his eloquence to persuade Neoptolemus to get control of Philoctetes by trickery. Neoptolemus reluctantly consents and has carried the design almost to completion when his pity is so aroused by a fit of pain which seizes Philoctetes that he reveals to him Ulysses's purpose to take him to Troy. In spite of his wretched plight Philoctetes cannot be persuaded to consent, but he in turn persuades Neoptolemus

to take him home, in defiance of Ulysses and the other generals. They are about to depart when the deified Heracles intervenes and reconciles Philoctetes to the necessity of going to Troy. The purpose of Ulysses is achieved, but not through his own skill; Neoptolemus has been true to his better self, and Philoctetes's passion for revenge is overruled by the influence of the divinity.

At the opening of the tragedy which bears her name, Electra is living in wretchedness, brooding over the death of her father and yearning for the return of Orestes to avenge it. She defies the authority of her father's murderer and suffers for that defiance. She receives news that she is soon to be buried alive, and then the news that Orestes is dead. She resolves to meet this crisis by slaying Ægisthus, but her project is interrupted by the arrival and recognition of Orestes. Her joy at his return is unbounded, but action is required. Without a trace of compunction she furthers his purpose to kill Clytemnestra, receives the returning Ægisthus with fine irony, and delivers him up to be slain. The drama ends in her complete triumph. Here, as in the "Philoctetes," we see that genuine tragic effect may be produced without involving the ruin of the protagonist. It is enough that a great soul meets a great crisis, whatever the outcome may be.

The "Antigone" is a double tragedy, for although Antigone herself is the center of interest, the transgression and downfall of Creon are also protrayed. Creon has decreed that the body of Polynices shall remain unburied. In defiance of this decree Antigone pays funeral rites to her beloved brother, proclaiming that she obeys a divine law far more worthy of reverence than the command of Creon. He in turn declares that no favor must be shown to the enemy of the state. In spite of the pleading of his son Hæmon, he orders that Antigone be left to perish in a living tomb. Tiresias proclaims the divine displeasure at the

exposure of Polynices. Creon's fears are aroused. He orders the burial of Polynices and the release of Antigone, but it is too late. Antigone has already hanged herself; her lover Hæmon kills himself in her father's sight, and Creon's wife, on hearing of the disaster, takes her own life. Creon confesses and laments his guilt and wanders forth to a life of wretchedness. A conflict of divine and human law is thus depicted. Antigone, the champion of the divine law, goes to a serene and glorious martyrdom, but her opponent Creon is left a pitiable survivor.

* * *

We have now analyzed tragedy into its chief constituents and shown how they are employed in the dramas of Sophocles. But this analysis has done little or nothing to show why we care for tragedy. The dominant elements in tragedy are sin and disaster. Why do we care to see them depicted? In actual life we try to have as little of them as possible. If circumstances force us to witness an actual crime or an actual death we do not wish to repeat the experience; but we have our favorite tragedies which we read and reread, and which we see on the stage as often as opportunity offers. It seems a strange perversion that makes us seek in art what we shun in life.

It is of course true that the mimic woes of tragedy do not produce upon us the same effect as the corresponding actuality would produce. The tragic action takes place in a world of its own, cut off from the world of our practical activity. We know that the actors are not really in agony. We do not rush upon the stage to dry their tears or bind up their wounds. Our attitude is contemplative, not active. Since action is inhibited one might suppose that the sympathies which are the springs of action were also inhibited, but if that were the case tragedy would be a mere spectacle and arouse only such interest as we feel in the gyrations of a mechanical toy. That is not our experience.

The stirring of our sympathies seems to be essential to tragic effect, and we value most the tragedy that stirs them most profoundly.

We have already seen that tragedy may be a vehicle for the expression of profound moral and philosophical convictions and some theorist may seek to explain the appeal of tragedy on this basis. We tolerate the depiction of crime and disaster, he would say, because of the profound truths which are conveyed. But this again seems to be the reverse of our experience. The appeal seems to lie in the events and the characters, not in the lesson; we are lured by the story to listen to the theory, not *vice versa*.

The reason for our love of tragedy evidently does not lie upon the surface of the tragedy itself, nor upon the surface of our consciousness. We must look deeper. There may be forces at work in us of which we ordinarily have no clear consciousness. I believe that there are such forces at work, and that a consideration of them will throw light on our problem. Let us therefore consider at some length a certain theory as to the structure of our mental life. The most recent and most adequate form of this theory is that of Professor Freud of Vienna, whose writings first suggested the reflections upon which this essay is based; but it will be convenient to begin with the earlier and simpler forms of the theory.

Plato in the ninth book of the "Republic" constructs a composite image of the soul.[2] The first component is "a multitudinous, many-headed monster having a ring of heads of all manner of beasts, tame and wild, which he is able to generate and metamorphose at will." The second component is a lion, and the third a man. The fusion of these three constitutes the human soul. To attain righteousness a man must "ever so speak and act as to give the man within him in some way or other the most complete

[2] Steph., 588 C, 589 A B (Jowett's translation).

mastery over the entire human creature. He should watch over the many-headed monster like a good husbandman, fostering and cultivating the gentle qualities and preventing the wild ones from growing: he should be making the lion heart his ally, and in common care of them should be uniting the several parts with one another and with himself." In other passages and in varied metaphors Plato repeats his analysis of the soul into a rational element, a passionate element, and a merely animal element, which strive against one another, but ought to be brought into harmony.

Plato is not alone in noting the presence of conflicting tendencies in our consciousness and conduct. Such conflicts are a salient aspect of human experience and an ever-recurring topic in the writings of moral and religious teachers. Christian thought has dwelt upon the conflict of the flesh and the spirit. Popular psychology tells of head and heart and physical appetites. All of these divisions have a certain value and pertinency, but they do not represent any thoroughgoing analysis. They do not represent all the cleavages that may be found, but only those which have the greatest interest to the moralist.

It is indeed convenient to distinguish one's higher self from one's lower nature, or one's intellectual self from one's emotional self. But we may go further. We may distinguish a professional self from the self that is revealed in contact with one's family, and that again from the self which is preoccupied with some amusement or some hobby. Each of these selves has its appropriate series of ideas, its appropriate group of emotions, its appropriate type of behavior. Carrying this analysis still further we find smaller and smaller units, each consisting of a group of ideas with a characteristic emotional tone and a tendency to produce a particular sort of conduct.

We have now reached Professor Freud's form of the

theory. In his terminology the units above defined are called psychic complexes. Every complex is organized about some core, some central idea or tendency. The idea of Boston, for instance, is the core of a complex including the shops and theaters that one has visited there, the friends who live there, one's admiration or dislike of the city, a tendency to visit it as frequently or as seldom as possible, and many other ideas, and feelings and desires. The instinct to eat is the core of another complex, including the various kinds of food, the places where it may be obtained, the need of money to buy it, and so on. A man's profession is the core of a large and important complex, with a great variety of subcomplexes, involving his mass of technical information, his ambition for the future, and his methods of dealing with his associates and his rivals.

The whole content of a man's mind may thus be divided up into complexes, as a nation is divided up into smaller social groups. The various complexes are analogous to the families, clubs, corporations, professions, and political parties. It may be noted in passing that a given idea may belong to numerous complexes. Dinners for instance not only satisfy hunger, but are an occasion for social intercourse and sometimes for political speeches. The notion of dinner may therefore be a member of several distinct complexes, just as a single person may be the member of a family and also of a church and of a university.

It is obvious that these complexes are not all present in consciousness and expressed in conduct at once. A man devotes a part of the day to his profession, a part to eating, a part to social intercourse, or exercise, or amusement. The ideas, emotions, and modes of behavior which are present in one of these periods differ from those present in the rest. In other words, during each period he is controlled by a single complex, with its subordinate and allied complexes. If we analyzed the course of his experience more minutely

we should find the expressions of a series of complexes concerned with particular problems of his profession, particular friends, particular sources of amusement, and the like.

But the relations among the complexes are not confined to amicable succession in control. There are hostilities among them as there are hostilities among social groups in a nation. Amusement interferes with business, business with amusement, and charity may interfere with both. Morality seeks to organize and unify all these complexes in the interest of the social order and of the individual's highest welfare. In order to do this certain complexes must be enriched and perpetuated and given dominance over conduct; many must be radically modified in order to fit in; and some must be deprived of influence on conduct and banished from consciousness as far as possible.

It is these conflicts which lead to the Platonic simile of the man, the lion, and the beast, and to the Christian conception of a war between the flesh and the spirit. Such conceptions throw the bewildering variety of complexes into a few broad divisions made on moral grounds. But other cleavages and other conflicts are just as real, and the old divisions are therefore inadequate from a scientific standpoint. There are esthetic and prudential conflicts as well as moral conflicts. There is a repression of tendencies to bad taste and foolishness and unconventionality as well as a repression of tendencies to vice. Our waking life as a whole is dominated by a great group of complexes which guide our thoughts and conduct along the lines of conventional morality and taste and prudence. This group of complexes may be said to constitute the upper stratum of the mind; the less favored complexes, the lower stratum.

The process by which one complex prevents another from expressing itself in conduct and even banishes it from consciousness is called suppression. But suppressed complexes are not annihilated. They may continue to invade

consciousness from time to time, or they may influence the course of events in consciousness without actually coming to the surface. The dictates of prudence and kindliness lead us to suppress reference to the faults and misfortunes of those with whom we converse, but anger weakens the force of this censorship, and the angry man says things which he could not bring himself to say in a moment of calmness. Other strong passions as well as anger may weaken the control of the upper stratum; alcohol and other drugs, fatigue, weakness, and pain have a similar effect.

But suppressed complexes may also give evidence of their presence without actually coming into consciousness. Like moles burrowing in the ground, they may disturb the surface without appearing on it. It is on this principle that Professor Freud accounts for a variety of phenomena, including dreams, hysteria, and wit.

This fact that complexes once or repeatedly suppressed are likely to affect consciousness again may be most conveniently expressed by saying that they continue to exist in the subconscious, but any reference to the subconscious is likely to arouse distrust and provoke controversy. Here, however, no specific theory of the subconscious is presupposed. The suppressed complexes may be preserved merely in the form of traces in the nervous system, which may become from time to time the physiological basis of the disturbances above mentioned; or they may be preserved as actual conscious states not accessible to introspection, but constituting a series of processes parallel to those which we find by introspection; or their subconscious survival may be merely a convenient term to denote the virtual existence of something whose only actual existence lies in its occasional effects on introspective consciousness. One of these theories will serve quite as well as another for the present purpose.

The full force of the theory of suppressed complexes

can be seen only in its applications, and of these I can give but a few examples. I shall select examples that seem most likely to have a bearing on the theory of tragic effect. The first of the series of cases that originally led to the formulation of the theory was as follows. A girl was suffering from hysteria. At one time during her illness she became unable to drink. In spite of her thirst she could not bring herself to touch a glass of water. While under hypnosis she happened to relate that a few weeks before this she had seen the governess's dog drink from a glass of water. She had been intensely disgusted at the sight, but had repressed all signs of the emotion out of respect to conventionality. As she narrated the incident she gave energetic expression to her restrained anger. She soon called for a glass of water and drank without trouble. The symptom vanished permanently.

The mechanism of the case seems to be as follows. An incident occurred which combined the feelings of disgust and repugnance with the idea of drinking water. The complex thus formed was firmly repressed by the upper stratum. Its energy was thus deprived of its natural outlet in angry words and gesture, but it tended to escape in some other channel. The line of least resistance lay in making the process of drinking distasteful to the person. The reason for this distaste was prevented from rising into consciousness by the censorship of the complexes of the upper stratum. When the vigilance of the upper stratum was relaxed by hypnosis, the complex found a natural outlet for its energies, and no longer needed to produce an abnormal symptom. Freud has treated many hysteric symptoms on the presupposition that they have a similar origin and may be relieved in a similar way. His method of treatment is to cause the patient to explore his memories. He especially insists that all ideas that tend to arise shall be allowed to run a free course; none must be rejected as unpleasant or

foolish or improper; criticism must be relaxed. In short, the censorship of the upper stratum must be suspended as far as possible, for in that way the suppressed complexes have the best chance to find relief.

Freud calls this treatment the cathartic treatment, thus recalling to us the most famous of all dicta on the function of tragedy, namely Aristotle's statement that tragedy through pity and terror effects a catharsis of these emotions. It is possible that we have here something more than a superficial analogy, but before we consider this possibility let us take up one further application of Freud's theory.

Dreams for the most part seem to have no intelligible connection with the rest of life. Some of them, however, will be found to depict situations which are demanded by suppressed wishes. Erotic dreams are a typical instance of this. This suggests that other dreams may be disguised expressions of suppressed wishes just as the hysterical symptom is a disguised manifestation of suppressed emotion. There is excellent evidence that this is the case. Let a person consider one of his own dreams that does not on the face of it express a wish. Let him analyze it into its components, that is, let him consider each of the persons and incidents depicted one by one. Let him fix his attention on one of these, and allow the associated ideas to flow into consciousness with perfect freedom, suspending as well as he can the critical censorship of the upper stratum. Let him do the same for each of the other components. In the course of this process he will be almost sure to come upon the memory of some wish or tendency that he has suppressed. That idea will come with a certain air of finality, and the investigator will have an instinctive feeling that his search has found its goal.

It seems natural to suppose that the suppressed wishes thus recalled are the sources of the dream. The relaxa-

tion of the censorship of the upper stratum during sleep gives the suppressed complexes an opportunity to disport themselves. But they do not find the censorship entirely suspended. They therefore remain suppressed until they happen to assume the form of some imagery which the censorship will allow to pass. The wishes may therefore appear only in a disguised form, and the more firmly they are suppressed in the waking life, the more complete the disguise which they assume in the dream, because of the resistance they must overcome. The process by which this disguise was effected is retraced step by step in reverse order by the series of associated ideas above noted.

This process may be illustrated in the case of a man who dreamed of an acquaintance who was teaching in the same university with him. The dream-image had the features of an uncle of the dreamer's, though it purported to represent the acquaintance. It was accompanied by the consciousness of a strong affection for this composite person. On tracing out the associated ideas the dreamer recalled that this uncle was rather a blockhead, had sometimes got into trouble with the law, and had never made a success of his life; he also recalled that his acquaintance was his rival for appointment to a certain professorship, but was not extremely brilliant, and that another rival had been involved in a lawsuit in early life. The dream may therefore be regarded as the expression of a wish that his rivals should fail in their candidacy for the professorship. The dream emphasized the points which might militate against his rivals' success and hinted that they would be decisive, but it did this indirectly by identifying the rivals with another person who had analogous shortcomings, and whose shortcomings moreover had proved disastrous. But why was the feeling of affection present in a dream whose motive was hostility? This reversal would seem to be due to the repressing influence of the upper stratum, which

thus as it were avenges itself on the intruding complex. Freud holds that the emotional tone of a dream is very frequently due to the upper stratum, not to the lower.

The difficulty of recognizing dreams as the fulfilment of wishes is now readily explained. It is suppressed wishes that they fulfil. When the dreamer awakes and the upper stratum resumes control, he may sincerely declare that he has no such wish. It is not his dominant self which harbors it, but the submerged self of which he is not even conscious. Moreover the wished-for situation is often disguised beyond recognition, precisely in order to elude the censorship of the upper stratum. The reversal of the emotional tone often makes the situation seem one that is to be feared and shunned rather than wished. Furthermore the wishes expressed are often survivals of early childhood and quite foreign to adult habits. Freud attributes the dreams of falling through the air, or floating horizontally in it, to childhood experiences of being tossed up and caught again, or rapidly carried along—experiences of which children are fond.

We have now discussed the conflicts between complexes. We have shown how the vanquished complexes, although suppressed, still find an outlet for their energies in hysteria and in dreams. Suppressed complexes are also concerned in certain slips of memory, in the production of wit and in its enjoyment, but we shall not attempt to analyze these processes.

There is, however, another type of relation between complexes which deserves our attention. There is not merely conflict between complexes but there is also cooperation, reinforcement, and even coalescence. Professional zeal is reinforced by the desire for financial return. The desire for financial return is itself the resultant of a variety of complexes including desires for food and shelter, for family life, for social position, and the like. A special

and very important case of this is the reinforcement of a complex belonging to the upper stratum by a suppressed complex. When this occurs a double result follows. The suppressed complex has found an outlet for its energies without having to appear in a form offensive to the upper stratum; it need no longer give rise to hysterical symptoms or to dreams; its contribution of energy to the reinforced complex serves as a substitute for these. On the other hand the reinforced complex has more energy at its command, and therefore expresses itself with more vigor and completeness. Such a process may be called the sublimation of the suppressed complex. In a broader sense the term sublimation may be applied to any case in which a complex, whether suppressed or not, is made tributary to a complex of higher esthetic or moral value. Perhaps the most striking instance of sublimation is that of romantic love, in which physical passion is diverted from immediate gratification, and finds vent in emotions of tenderness and adoration, in the production of songs and sonnets, and in the intensification of professional or warlike ambitions.

I have not attempted to establish the truth of Freud's theories, but only to show what they are. I have omitted many aspects of them which are important for the explanation of dreams or hysteria, but which do not seem to be applicable to tragedy. If therefore the account of dreams and hysteria seems inadequate, that should not discredit the theory of complexes. The points of the theory which I have sought to make clear are that the mind contains a variety of psychic complexes, that some of these come to be suppressed, that the complexes dominant in the waking life form a fairly well-defined group which may be called the upper stratum, that suppressed complexes force their way to the surface in disguised forms, and that complexes may be sublimated.

How then is this theory to be applied to the psychology of tragedy? Professor Freud himself has given us some clues. As I have already noted, his term "cathartic treatment" suggests Aristotle's definition of the function of tragedy. It raises the query: "May the tragic catharsis also be the release or sublimation of the suppressed complexes?" Freud carries us a step further by an incidental reference in his book on dreams.[3] He is speaking of those premonitions of erotic passion which begin very early in childhood, but whose presence usually escapes notice. He asserts that the boy's first infatuation is for his mother, and his first jealousy for his father. The influence of such tendencies survives in the special devotion which a son usually shows to his mother, and the strained relations which frequently develop between him and his father. Freud then refers to the "Œdipus Tyrannus" which hinges on precisely this situation. Œdipus has unwittingly yet actually become the murderer of his father and the husband of his mother.

Freud attributes the peculiar poignancy of the horror which we feel at the situation of Œdipus to the fact that in our early and forgotten infancy we had to suppress such tendencies as we here see realized; the upper stratum recognizes an ancient enemy and reacts against it with peculiar force. He does not explicitly offer a theory of tragedy in general. He claims to explain why we are horrified, but does not explain why we are fascinated.

Let us now go a step beyond Freud, but in the direction which his work suggests, and formulate a general theory. *Tragedy attracts us because it depicts situations which our suppressed complexes demand.* The protagonist does what our suppressed complexes would have us do; his action therefore gratifies those complexes. Where the plot of the tragedy centers around transgression and disaster, it is

[3] S. Freud, *Die Traumdeutung*, 3d ed., Leipsic, 1911, 189 ff.

not the disaster to the protagonist which attracts us, but his transgression, and the way in which he bears the disaster. The primary appeal is therefore not to the upper stratum but to the lower. The upper stratum, however, is not idle; it must be placated, or it will force us to turn away from the tragedy in disgust, and thus leave the suppressed complexes unsatisfied. From this psychological standpoint the primary aspect of tragedy is the appeal to suppressed complexes, and its secondary aspect the methods of placating the upper stratum.

The theory above stated is perfectly general in form, but I shall not here attempt to apply it to any other works than those of Sophocles. Let us consider what are the suppressed complexes to which the Sophoclean tragedies appeal, and what devices are employed to placate the upper stratum.

A drama that involves no contest hardly deserves the name of drama, and tragedy especially centers about some struggle in which the protagonist engages. This appeals to an instinct which is very powerful, yet which has to be repressed in civilized communities, namely pugnacity. When a child's wishes are thwarted he becomes angry and fights to the best of his ability. But all sorts of social forces work upon him to suppress such tendencies. He learns to control or at least to conceal his resentments and animosities. When he has reached maturity these tendencies have little opportunity for free play. The upper stratum exercises a rigid censorship on all expressions of anger and hostility, for both prudence and kindliness require self-control.

Tragedy gratifies our pugnacity by showing the fighting spirit in vigorous operation. An instance of this is Œdipus's graphic narrative of the quarrel at the cross-roads, where he, single-handed, slew Laius and his four retainers. The account culminates in the grim phrase

κτείνω δὲ τοὺς ξύμπαντας,

which is thrilling in its effect. It is not merely such bits as this, however, that appeal to our pugnacity, for in many cases the attitude of the protagonist in the whole action is one of defiance. Philoctetes's hatred of the Atridæ is the keynote of the drama that bears his name. One of its most effective passages is that in which Philoctetes, having just recovered from a paroxysm of physical anguish, reasserts his unalterable resolution to remain in misery rather than bow to the will of his enemies. The effect is intensified when the protagonist's hate is directed against some member of his own family. We find hate where we might expect love, and judge its power by the strength of the ties it has broken. This effect is produced by Electra's desire for vengeance upon her mother, and by the curse which the aged Œdipus invokes upon his sons. Hostility to the state and to the gods is especially effective, because the protagonist defies a power so much greater than his own. Our admiration of Antigone is due in part to her magnificent defiance of Creon, and Ajax stirs us by his defiance of the gods.

Closely allied with pugnacity is the tendency to pride, display, and self-assertion. This tendency also shows itself in children, but is repressed. The community demands modesty, and humiliates those who will not learn it. A strong appeal to this tendency is made by the magnificent self-confidence of such heroes as Ajax and Œdipus. Most of Sophocles's protagonists belong to royal houses and are proud of the fact. This pride makes their downfall all the more pitiable, but it also nerves them to endurance, as when the aged Œdipus mentions his own dignity as one of the sources of his resignation.

Another tendency which is universally present and universally subject to some degree of repression is erotic passion. Freud's treatment of this factor in the "Œdipus

Tyrannus" has already been noted. Let me add that I suppose that this factor not only makes the situation horrible to the upper stratum, as Freud remarks, but also makes it attractive to the lower stratum. We admire the tragedy because the fascination which we dimly feel outweighs the horror of which we are clearly conscious.

Freud might well have extended his investigations to the "Electra," which seems to me to be the companion-piece to the "Œdipus." What is true of the boy's relation to his parents is true of the girl's *mutatis mutandis*. The father is the first recipient of her devotion, and the mother her first rival; and in a lesser degree a sister is also a rival. Electra's father has been murdered by her mother and her mother's paramour. She herself is forbidden to marry, lest she raise up children hostile to the murderers, and her natural impulses are thus turned inward to embitter her brooding passion for revenge. What wonder that she hates Clytemnestra, who has not only cut off the object of her devotion, but has shown herself unworthy ever to have been Agamemnon's mate! What wonder that she regards the sacrifice of her sister Iphigenia as a flimsy excuse for such a crime, and that she scorns the weakness of her other sister Chrysothemis! What wonder that she hates Ægisthus who usurps her father's power! What wonder that she rails at the adulterous union of the murderers! Such are the motives which play far beneath the surface, but which contribute much to the power of the drama.

In the "Ajax" and the "Antigone" the erotic motive is not of great importance, for the devotion of Tecmessa to Ajax and of Hæmon to Antigone are only incidental to the chief action. But in the "Trachiniæ" it is the dominant force. It is passion that leads Heracles to capture Iole and send her to Trachis. It is the desire to be first in Heracles's affections which moves Deianira to send the fatal gift.

This tragedy is not so effective as the other Sophoclean tragedies that have survived. The reason is that the underlying motives do not find sufficiently vigorous expression. We know Heracles's passion for Iole only by cold hearsay. Deianira is not moved to any grand revenge or grand renunciation, but meets the crisis with a foolish trick.

Sophocles's dramas have still another source of power, which is found in the laments. The psychology of their effect is a topic on which I cannot speak with confidence, but the situation seems to be this. In actual life the effect of disaster is to depress our vitality and also to evoke an emotional reaction, involving tears, moans, and violent gestures. This emotional expression seems to constitute a sort of revulsion against the situation which occasions the depression. We avoid such situations because of the depression which they occasion, not because of the revulsion—we do not primarily revolt against the revulsion, which would be absurd. There is no way of inhibiting the depression, but the revulsion is suppressed in many cases by pride, by a desire not to alarm others, and by other motives. Now when laments are presented on the stage our vitality is not depressed, for the disaster has not fallen upon us, but our suppressed tendencies to emotional revulsions are gratified, for we see grief expressed with eloquence and abandon. I need only mention the passage which follows the blinding of Œdipus to show how effective a lament may be. Laments are prominent in all the seven tragedies. They are especially powerful where the protagonist summons his pride and his fighting spirit to his aid as do Ajax and Œdipus.

Other suppressed complexes to which tragedy appeals could be mentioned, but pugnacity, pride, erotic passion, and the tendency to lamentation seem to be the most important. These are emphasized in countless ways by the skill of the tragic poet.

One of the most important devices of emphasis is contrast. The most tragic of contrasts is that between the passionate hero and the force which threatens or compasses his ruin. When Œdipus derides the oracles, or Ajax speaks defiantly of the gods, we feel their vitality all the more intensely because we are at the same time reminded of the doom which awaits them. The actual occurrence of the disaster produces a double emphasis. It creates a contrast between the strength of the hero's character and the wretchedness of his plight, and it also tests the hero's character by evoking its whole strength. One reason why the actual occurrence of the disaster in tragedy is preferable to its being threatened and averted is that only so can all the resources of the hero's character be brought into play.

Emphasis on the hero's passion is also secured by the rhetorical art with which the speeches and dialogue are composed. The protagonist is not inarticulate but eloquent. Moreover his emotions find not only a direct expression in his own words and deeds, but an indirect expression through the responsive emotions of the chorus. We see not only the stern resolution of Ajax but the perplexed forebodings and again the false hopes of his sailors; not only the misery of Œdipus but the sympathetic grief of the Thebans.

All these devices for emphasizing the hero's passion commend the drama to the suppressed complexes; but they would make it only the more obnoxious to the upper stratum if no concessions were made to the demands of morality, conventionality, and beauty. Let us therefore turn to those extenuating circumstances and elevating factors in tragedy which make it acceptable to the upper stratum of the mind.

A great variety of factors tend to palliate the evil involved in the transgression which the protagonist in most tragedies commits. Chief among these are the motives

which at least partially justify his act. Ajax, Electra, and Philoctetes have received injuries which tend to justify the violence of their hatred. The presence of Iole justifies Deianira in an attempt to guarantee her own position, though not in the folly of her method. Antigone is moved by love for her brother and by a reverence for the divine laws, while Creon is moved by what he regards as the interests of the state.

Sometimes the situation presents a dilemma such that whichever course the hero may choose will involve disloyalty. Neoptolemus has to choose between loyalty to the Greek leaders and the demands of honesty and pity; Antigone has to choose between respect for human law and respect for divine law. Since in such cases the protagonist cannot avoid evil, he is the more readily forgiven. Thus the upper stratum is placated, and our suppressed pugnacity delights in defiance displayed in a good cause nearly as much as if the cause were evil.

There is a peculiar economy of motive in a tragedy such as the "Antigone," where the transgression of each of the chief characters tends to justify the transgression of the other. The evil is decreased by duplication and our sympathy intensified by division.

Transgression is often condoned because it seems to be the incidental result of an admirable quality. Ajax's impious scorn of divine aid and his excessive resentment of an injury are incidental to that impetuous valor which made him the "bulwark of the Achæans." Œdipus's hasty action at the cross-roads, and his contempt for the seemingly discredited oracle, are due to the qualities of energy, sagacity, and self-reliance that won him a kingdom and enabled him to rule it well.

When the protagonist transgresses unwittingly his act loses none of its horror but becomes pitiable instead of

reprehensible. The parricide and incest of Œdipus, and Deianira's fatal gift to Heracles, are cases of this sort.

In the "Œdipus Tyrannus" the whole course of Œdipus's life is dominated by the mysterious and implacable fate which step by step fulfils the oracle spoken at his birth. He seems to be acting of his own free will and avoiding the disasters of which he is warned. But this semblance of freedom is actual bondage, and this semblance of escape is actual ruin. His transgression indeed flows from his character, but since character and occasion are fatally predetermined the responsibility seems to be lifted from his shoulders.

The Greek tragedies were based on familiar legends, and the audience knew in advance the general course of events. The contemplation of the action was mingled with foreknowledge of the impending disaster. The transgression therefore seemed less heinous because it was known that it would bring pitiable ruin instead of undeserved prosperity.

The transgression is more readily condoned when it is followed by repentance as well as disaster. Creon fully admits his guilt at the close of the "Antigone." Œdipus views his own deeds with the greatest horror when he learns their true nature.

The passionate reproaches which Creon and Œdipus heap upon themselves bring us to the topic of lament. While it is true that transgression is partly palliated by the laments which follow it, lamentation itself needs to be justified to the upper stratum. That justification is found in the extremity of the disaster which is the exciting cause.

Ajax's loss of honor, Philoctetes's physical anguish, Electra's grief for her father, Œdipus's discovery of his own guilt, are situations which justify the most unbridled expressions of grief and anguish. When the person's own

guilt is the occasion of his lament we have a sort of reciprocity in which guilt and lament mutually justify each other.

The disasters which tragedy depicts would be merely shocking, not tragic, if torn from their setting and narrated in the bald phrases of a newspaper item. Disaster must be exalted by receiving some spiritual significance in order to make it acceptable to the upper stratum.

Disaster most frequently appears as retribution. It is the fit punishment for transgression, and the moral sense of the spectator is satisfied. The ruin of Ajax, Œdipus and Heracles is terrible, but not wholly undeserved. Disaster also appears as due to the feebleness and mortality of man, and serves to remind us of these limitations. No human prowess is invincible; no human prosperity is secure against calamity. Such thoughts as these were prominent in the proverbial wisdom of the Greeks. Ulysses in the "Ajax" says:

> "I commiserate him .....
> Seeing in us all, as many as are alive,
> Nothing but phantoms or a fleeting shade."[4]

Man is not only morally defective but physically weak, and he is hemmed in by natural as well as moral laws. Tragedy throws upon its disasters the light of this general principle; it depicts them as inevitable, and thus leaves no room for protest.

Disaster is ennobled by the nobility with which it is borne. Such is the nobility of Œdipus, who blinds himself to shut out the sights which could only intensify his misery. Antigone faces death with the serenity of a martyr. Ajax seeks death as a release from ignominy. The aged Œdipus is vindicated and transfigured by the mysterious doom which the gods prepare for him.

Besides the factors which specifically tend to palliate

[4] Young's translation.

the horrors of transgression and of disaster, there are others which ennoble the tragedy as a whole. The legends on which tragedies were based had the glamor of antiquity and commanded almost religious reverence. The very place in which the tragedies were presented was sacred, and the performance was an integral part of a religious festival.

All the arts of diction and music and dancing were lavished on the presentation. The dialogue is in an exalted style, and the imagery is often beautiful.

The choral lyrics express emotions responsive to the progress of the action. But music and dancing soften the emotions they depict: they do not rack us as speech and gesture sometimes do. The choral passages serve as resting places where we relieve ourselves from tension before the inexorable course of the events again hurries us on. Scenes of tenderness have a similar function. Ajax sends for his son, prays that his lot may be more fortunate than his father's, and gives him his shield. Œdipus weeps over his helpless daughters. Deianira shows pity for Iole and the other captives. Scenes like these soften the harshness of the action in which they intervene.

Such then are the primary factors in tragedy, which appeal to the suppressed complexes, and the subsidiary factors, which disarm the hostility of the upper stratum. The structure of tragedy is like the structure of a dream, since its fundamental motives are derived from the lower stratum, and these motives are forced to express themselves in a guise acceptable to the upper stratum. The complexes which produce the dream are often survivals from the experiences of early childhood. So in the case of tragedy, the legends on which it is based have come down from the childhood of the race. And since each individual has to recapitulate the development of the race in his own

development, these ancient legends remain significant to every generation.

Tragedy may also be compared, not to the symptoms of hysteria, but to its cure. In the cathartic treatment of hysteria the purpose is to secure a vigorous emotional expression of the suppressed complex that shall drain off its energy and restore serenity to the mind as a whole. This is precisely what tragedy does for us; it furnishes an emotional outlet for our suppressed complexes. The relief which follows constitutes a sort of catharsis.

But the tragic catharsis is not merely relief; it also has a higher aspect, that of sublimation. Tragedy does not merely release the energy of the suppressed complexes, but turns it into more profitable channels. That is why tragedy gives us a sense of expansion and elevation, and makes us feel that our taste for it is not merely permissible but salutary.

Many of the devices for conciliating the upper stratum consist in appealing to some of its component complexes.

When disaster is depicted as due to moral or natural law, a strong appeal is made to our ethical and philosophical interests. It is vividly impressed upon us that man is mortal and must think thoughts that befit mortality, that revolt against the state brings disastrous results, that the violation of family ties is horrible in the extreme, that oracles are sure to be fulfilled at last, and that the gods must be reverenced. The drama is thus made to teach a lesson, but the lesson is effective only because the play has held the attention and stirred the imagination. When once the dramatist has us under his spell we are receptive to his message, but the spell of tragedy depends on its appeal to our suppressed complexes. It is they that furnish the energy which rivets our attention on the drama, which in turn embodies the message. A channel of discharge is thus established, leading from the suppressed complexes to those

complexes of the upper stratum which center in ethical and philosophical interests. The former are therefore made tributary to the latter. The lower complexes are relieved and the higher are strengthened and stimulated. Discord is replaced by harmony.

This happy result is not due to design. The Greek story-tellers whose imagination built up the legends of the house of Labdacus and the house of Atreus knew nothing of suppressed complexes and were not plotting to conciliate the upper stratum. But the story-teller and his auditors *had* suppressed complexes and upper strata, which guided the imagination of the story-teller and stimulated or restrained the applause of his auditors. There was a process of trial and error in which those stories were sifted out which the people best liked to hear. The dramas which grew out of these legends were developed by essentially the same process. Those plots and those methods of treatment survived which appealed to the Athenian public. Tragedy is a natural growth, not a weapon suddenly devised in the interest of some moral or philosophical propaganda. But having once arisen, it has a theoretical content and a moral effect.

The theoretical content of Sophocles's tragedies has been sufficiently indicated by previous references to his doctrines of human frailty and moral retribution. But it may be well to close with some remarks on the moral effect of tragedy. We saw that catharsis has two aspects, one of release, the other of sublimation. Since the suppressed complexes are potential disturbers of our moral peace it would seem to be a moral gain to discharge their energy into harmless channels. That is doubtless the case unless the complexes are strengthened in the process. There is sometimes an effect analogous to that which exercise has on the muscles. When a person accustomed to exercise is deprived of it for a certain length of time he becomes rest-

less; energy accumulates which demands relief through exercise. But exercise if freely pursued is likely to strengthen the muscles; if it is later discontinued the uneasiness will be all the greater. A regimen of exercise would have to be very delicately balanced in order to relieve all uneasiness without strengthening the muscles. So in the case of suppressed complexes, the processes which release their energy are likely also to enhance it. It would be very difficult to say just how often a person should visit a tragedy in order to give his complexes relief without increasing their future demands.

The situation seems more favorable when sublimation as well as release occurs. A relatively permanent connection is then established which makes the lower complexes tributary to the higher. But even in this case the lower complex may be strengthened, and sublimation is rarely so complete that the lower complex finds an outlet only through the upper one. Romantic love involves an elaborate sublimation of erotic passion, but often fails to secure entire control of its energies. So we may justly fear that the most elevating tragedies will sometimes strengthen the passions they sublimate.

Tragedy is therefore a mixed good, like nearly all the things we cherish. Its effect may sometimes tend toward morality, sometimes away from it. But fortunately its justification does not lie in its value as an instrument of moral education, but in its intrinsic value as a form of art. Morality has more potent instruments at its command, and may be trusted to take care of itself. Tragedy does enough if it lifts us for a brief time above the trivialities of life, and fills our imaginations with its glorious heroes and their mysterious fates.

ALBERT R. CHANDLER.
HARVARD UNIVERSITY, Cambridge, Mass.

SCIENTIFIC THEOLOGY.

[This paper is addressed to those who are dissatisfied with the views commonly set forth of a creator and ruler of the universe; to those who through some acquaintance with modern science find an inconclusiveness in theological reasoning, and to those who have noticed that religious dogmas have lost their hold upon the majority of intelligent men.

On the other hand those who find full satisfaction in a creed and those who have no practical familiarity with scientific induction will find here nothing worth while.

It is to be expected also that some who are unable to follow the reasoning will try to demolish it by attributing to separate phrases or statements meanings not intended by the writer. Life is too short to guard fully against such misunderstandings.—T. P. H.]

ALL men learn by experience. From accumulated experiences philosophers draw conclusions valuable to all. Experience being very common and reasoning rather rare in the early ages of humanity, reasoning was highly esteemed, then over-rated, valued as an end and not as a means to wisdom; and so the extravagant pretensions of philosophers fell later into contempt.

Then Science was born. Conclusions were logically drawn from wide and accurately observed experiences. These conclusions were further tested by application to new sets of facts and corrected as often as found defective. Astrology then gave way to astronomy. The "Black Art" became chemistry. Soothsaying and witchcraft were replaced by psychology.

The old philosophical views depended for their accep-

tance upon the authority of some great name. The greatest and wisest of men, the men nearest to nature's heart, felt and dimly saw the deep realities of the universe. Some of their immediate followers were able to see the same verities when pointed out to them. The others who accepted their views did so on faith, believing in the ability and truthfulness of their leaders who claimed to see what was beyond their own limited powers.

Scientific conclusions do not rest upon authority, but upon facts, the investigation of which is open to every one, and upon inductive reasoning which is worthless if it quails before the most searching criticism. The pursuit of science is the pursuit of truth inductively.

When we say that theology is unscientific, we do not imply that it is false. We mean that its utterances are given under the authority of great names, and acceptance is asked on the basis of authority rather than of facts and logic. The range of facts required for the construction of a scientific theology is so extensive that theology has been compelled to wait for the fuller development of science. Science has now covered the fields of space, matter and energy, and is rapidly including all organic life. That is to say, it is now generally admitted that in these departments the scientific method of investigation is the only one that gives results worth having.

Because of the complexity of their phenomena, religious experiences are among the last to be scientifically studied. It was necessary that scientists should first become familiar with the simpler phenomena of matter and energy before they were capable of understanding the more abstruse and complex. As the investigation of religious phenomena proceeds there will be developed from it the explanation of the facts, which will form the science of religion. A beginning has been made by William James and a few others, but it is not too much to say that at present no such science exists.

Theology, however, is not limited to religion. It attempts the largest generalizations of which we can conceive, and as a branch of philosophy it can become scientific only as an induction from all the classified facts of experience, of which religious experience is only a small part. At present it is therefore possible to give only a rude outline of scientific theology. Its fuller development waits the growth of biology, and especially of the science of religion.

What follows is written from the standpoint of realism. If the reader be accustomed to think in terms of idealism he may find it necessary to change the terminology. But the facts presented and the conclusions drawn are true, whatever view is taken as to the ultimate nature of the things considered.

From the unity of the universe Herbert Spencer drew the conclusion that polytheism is untenable. There cannot be more than one ruler of the universe. This conclusion meets with the approval of all scientists. Whether there is a God at all is a question for further investigation.

Let us first review some fundamental generalizations of science.

Time is something measurable. It enters into many other quantities, such as speed and power. But it is unchangeable, uncreatable and indestructible by any known power. It is as impossible for any of us to march one moment ahead into the future as it is to fall back into the past. We are in the march to stay, as long as we are in the world. Time is for us a cosmic element.

Space is a second cosmic element. It is uncreatable and indestructible. It is like itself only, and cannot be confused with anything else in the universe.

Matter has many forms. For more than a century the elements withstood the efforts of chemists to change them one into another. Nevertheless every scientist has believed

that though the elements are many they are all forms of one "matter," whose properties are described in every text-book of physics. The transformation of the radio-active elements recently discovered are of intense interest, but they add nothing, because nothing could be added, to the belief of the scientist in the essential oneness of matter, of which he sees only the varying forms. Matter, including under this term the ether, is indestructible and uncreatable by any known power. It is a third cosmic element.

One other such element is known to science. *Energy* (as defined in physics) has existence in many convertible forms, as motion, strain, heat, light, sound and electricity. But, though easily transformed, energy is indestructible and uncreatable. That is to say, not the least particle of energy is ever known to be created or destroyed. Energy is a fourth cosmic element.

These four are the only cosmic elements known to physical science. All other things in the visible world are variable in quantity as well as form. These have also the common character of simplicity. The smallest conceivable part of any of them does not differ in kind from any other part of the same element. All other things are complex and can be so divided that some of the parts are essentially unlike other parts.

These four elements and their combinations form the whole physical universe. Outside of them we know only one other class of things, namely, those directly relating to conscious life. In this class we know of no single thing that has the marks of a cosmic element, nothing that remains constant in quantity through all changes of quality and form. But by analogy we may infer that there is to the things of this class a substratum which does remain constant. Let this substratum be named "*Spirit.*" Then the argument for the existence of spirit as a fifth cosmic element is as follows: Five distinct classes of things—time,

space, matter, energy, and the things relating to conscious life—form with their combinations the known universe. The first four of these are each decided by scientists to be permanent in quantity. The fifth class must also be permanent in quantity or else subject to partial annihilation and creation from day to day—an unthinkable condition. If the fifth class is quantitatively permanent it must have under its apparently variable phenomena a common and permanent substratum (here named "spirit") having the characters of a cosmic element.

If this argument seems inconclusive, let it pass. It may be that these cosmic elements are not absolutely permanent. It may be that, just as has been found with some of the elements of matter, there is a slow transformation taking place, one cosmic element changing into another. It may be that spirit is the least constant of the five, and that the evolution of the ages is making spirit a larger and larger element of the universe. It may be that other cosmic elements exist, of which we have not yet the faintest intimation. These are speculations going far beyond our knowledge.

Let us return to things we know. About the ultimate nature of the chemical elements we know a little. The little that we know about the transformation of matter from one element into another does not invalidate any of our previous knowledge of the elements. We continue to call them elements, and we know that they mark a definite stage of aggregation of matter. So also any speculations we may indulge in about the ultimate nature of the cosmic elements cannot alter the fact that they are a very distinct and definite stage in the formation of the universe, and no future discoveries can alter that fact.

If five or more cosmic elements form the universe, there must be some fundamental bond amongst them, something holding them together as a universe, some substratum

common to them all and of which each is a manifestation, just as silver and carbon are two manifestations or forms of matter, and as heat and electricity are two manifestations of energy. To this common substratum let us apply the term "God."

It may be objected that the word "God" is already in use with an entirely different meaning and therefore should not be used here. But if it can be shown that the word as here defined is similar in its essential meaning to the term in common use, the objection falls. The only knowledge we can possibly have of God (using the word in the theological sense) is gleaned from his expression in the universe. But as long as the term is philosophically defined there will continue to be as many gods as there are thinkers to define it. Moreover the use of any term for this substratum, this common bond of the cosmic elements, would suggest to the reader the hypothesis of two gods, one immanent, belonging to the whole universe, the other an outsider, a Royal Mechanic who impresses his will upon the universe. Though the latter view of God is commonly taken by ignorant men, it has not the sanction of the greatest theologians. It would be folly to claim that all the efforts of the ages to find out God have been wasted. Men have blundered and will blunder, but there has been progress. If science has now reached a stage where it has some contribution of value to offer in the search after God, let us accept it and if necessary modify our ideas; but let us not forget what has been already learned, and that we can at best bring only a small contribution to this age-long quest. The God discerned by science is not a new God, but the same Eternal seen from another standpoint and seen in some respects more clearly.

How do we learn the properties of matter? We know matter only in its various forms or manifestations, as iron, wood, coal, rock, water, air, etc. Whatever properties are

present to some degree in every form of matter are properties of matter, such as mass, elasticity, volume. Properties found only in a few forms of matter are not considered fundamental. Magnetism belongs to iron, but not to copper; it is therefore not a property of matter. So also we know energy by finding what properties are common to its various forms. Proceeding in the same way to study the cosmic elements, we may gain a fuller knowledge of their substratum, God. Taking in each cosmic element one prominent character that is also found to some degree in each of the others, and is therefore universal, we may get, in rude outline, the attributes of God. Many others may be added, and every addition to our knowledge of the universe increases the possibilities of our knowledge of God.

From *Time* we get the suggestion that God is eternal; from *Space*, infinite; from *Matter*, that all action is according to regular law; from *Energy*, the principle of evolution; from *Spirit*, intelligence. The God of the universe is thus an eternal, infinite, consistent, evolving, intelligent God. These are attributes to which every scientist must give immediate assent. Careful study will enable him to add many more. Every one is at liberty to investigate and draw his own conclusions, as in every branch of science. The dogmatist is he who draws conclusions without sufficient investigation.

Men's ideas of God have been fragmentary and distorted. According to theologians God is spirit. But this is evidently no more true than the statement of the astronomer that God is infinity, or of the evolutionist that God is power, or of the materialist that God is matter. Each of these statements is an approximation toward truth. Since men are characteristically and essentially spirit, their first clear ideas of God were as spirit. Knowing little of matter, they clothed God with the common attributes of men; described him as irregular, capricious, selfish, vengeful, ty-

rannical; so that Ingersoll was moved to say, "An honest God is the noblest work of man." With the development of natural science came the knowledge of natural law and evolution. Scientists could no longer accept the theologians' ideas of God. By a revulsion of thought many men turned from the theological idea to an equally fragmentary idea based on materialism or on evolution. Caprice cannot coexist with natural law, and absolute and final perfectness is inconsistent with evolution. Gradually it has come to be generally realized that law is universal, and the theological idea of God has been modified accordingly. Evolution as a process in nature is now generally accepted, but it has not yet found a place in the theological system. The idea of an omnipotent and absolutely perfect God cannot be reconciled with the imperfections of the universe as we know it. But an evolving God is in harmony with all the facts we know, and cuts the knot of many an unsolved problem. This idea of evolution as an essential character of God is not easy to grasp fully. It contradicts the common view of God as unchangeable or as the Absolute. The whole known universe is in the march of evolution. Its essence is therefore evolving. Its plan is being formed. Its aims are more clearly defined now than ever before, its consciousness clearer and more extensive. Of a beginning or an end science knows nothing. The process only is seen. We are conscious portions of the universe. God is in us and is through us enlarging the plan and developing its parts. We have no reason to suppose there was ever an original design perfect in all details. The design itself is growing into consciousness in the heart of the universe, just as it grows in the life of an individual.

The problem of evil is recognized and its solution attempted by every known system of theology, from the ancient Egyptian down to the most modern Eddyism. The Zoroastrian doctrine of twin deities—one of them good, the

creator of light and life; and the other evil, the creator of darkness and death—has been partly incorporated into the Miltonian doctrine of a good and powerful God who has already defeated and will ultimately destroy the arch-rebel Satan, the source of all evil. Mrs. Eddy shifts evil into the realm of idealism, explaining it as delusions of mortal mind,—which are to be at last all cleared up. Every theological system recognizes that a contest of some sort is going on, and that evil is being overcome by good. But the origin of the fight, or the necessity for it, is nowhere made clear. If the creator of life cannot overcome his evil twin, or cannot destroy Satan, or cannot prevent "delusions of mortal mind," these causes of evil, he is not omnipotent. If he can but will not, he is not good.

Granting evolution as a fundamental principle in the universe, this conflict takes on a different appearance. Intelligence being also fundamental, there appears before us always ideals, which are the scouts of the evolutionary process. Present conditions are "good" as they make for our ideals, and "bad" when they do not. To a democrat the growth of the trusts was only bad,—his ideal was in the past. To a socialist the same industrial movement appeared good because it pointed toward his ideal of a co-operative future. The general trend of ideals, themselves the product of evolution, is necessarily in harmony with the general trend of evolution, of events, and hence it has come to be an essential part of doctrine in every religion that good will finally conquer. Social conditions that are now universally condemned are called bad because ideals are already picturing out the coming advance into something better. And when these ideals have become realities, higher ideals will take their place, compelling a re-classification of the events and conditions to suit the new ideals. So the forces of the universe mould its materials by means of intelligence into forms of higher organization. And as

the universe evolves, as knowledge becomes broader and truer, as ideals become more cosmic and events follow more closely, more and more of the universe is classed as "good," and stronger and fuller appears the harmony of all.

> "Yet I doubt not through the ages one increasing purpose runs,
> And the thoughts of men are widened with the process of the suns."

As an example of further investigation into the nature of God, let us consider the question whether or not God is love. This is equivalent to the question, Does love or its analogue appear in every part of the universe where such appearance is possible?

Love is not in any sense known to belong to time or space *per se*. Neither is its opposite. Nor can we conceive of either love or hate belonging to what we know of time and space. These two cosmic elements may therefore stand aside from this question. Taking the next element, matter, we find an analogue of love in gravitation, a universal attraction. If there are any atoms that repel each other, they do not belong to the visible universe, for they would ages ago have made their way toward the boundary of the ether, into the outer darkness, hence beyond the possibilities of our knowledge. In all atoms we find also chemical attraction more or less strongly developed. Cases of apparent repulsion are probably apparent only, and are easily explained on other grounds. Coming to the next cosmic element, energy, we find here and there antagonistic forms. For example two opposite electric charges tend to coalesce, disappear as electricity, and become light and heat. With such small and insignificant apparent exceptions, the energy of the universe is harmonious. In the fifth cosmic element, spirit, both love and hate appear. It remains to be seen whether both are real or whether one is merely the relative absence of the other. As a factor in life, love is supreme over hate, else the human race would perish. Every

man loves himself; and does what he thinks right and best for himself—perhaps not by your standards, but by his own. At first, in early childhood, his "self" includes only his own wishes and feelings. Later as he develops it comes to include successively his own body, his possessions, his family, his friends, his clan, his society, his class, his nation, his race, and all life. Everything outside his "self," that threatens to interfere with it, rouses antagonism because of his devotion to his "self." Here love is clearly seen to be the prime moving force, which appears as hate only in certain undeveloped conditions. Hate is then only limitation and negation. By definition, God is the essence of the whole universe; his love then extends to all that of which he is the essence, leaving no place for hate.

As a second example consider the question "Is God just?" By justice is meant equality of conditions and opportunities; or equal results for equal efforts of different individuals. As so defined justice is conspicuous by its absence from the universe. Paul claims that one vessel is made for honor, another for dishonor; and the inequality of conditions among men is patent. In the field of energy a very slight factor often makes the difference between intense action and almost no action. In matter, too, there is endless diversity of relation. And no two portions of either space or time are similarly related to the rest of the universe. Hence justice does not belong to the essence of the universe.

Justice is, after all, only a kind of rule-of-thumb that we apply to human affairs in default of fuller knowledge and stronger love. It is a negative standard, exceedingly defective, and wholly inferior to intelligent love. It could not be fundamental in the universe, and God is infinitely superior to it. In the evolutionary sense, God is not wholly good, but is becoming good; and he is not limited to justice because he has already gone far beyond it in unlimited love.

Whatever may be thought of the illustrations just given, the main contention of this paper is that it is now possible to apply the scientific method to investigate the characters of God. The facts of religious experience will ultimately be a great aid in such investigation, but as yet they have not been sufficiently studied. This method of investigation, being the most reliable and accurate known, must supersede all others and give later a scientific theology in which men of all creeds and races will agree.

In conclusion, the method of investigation here outlined and illustrated leads toward the center and source of being, which center is generally designated as God. The use of any other term instead of "God" would lead to wrong inferences. Outside of this center there is no known God, and he is known only through study of the universe.

T. Proctor Hall.

Vancouver, B. C.

ATOMISTIC DYNAMISM.

At all cost, we must have truth. It will be the achievement of the twentieth century.
Clémence Royer.

IT is indeed a great delight for progressive and enlightened minds to note the rapid growth of a great family of monistic thinkers, all united by their common recognition of the unity of substance in essence and quality in spite of its marvelous diversity in properties or modalities. It is an obvious fact that in the present day there exists among an even larger quantity of learned people a common sentiment that the fundamental laws and principles of the universe have been grasped at last, or that they will be grasped once for all in the very near future. If it is indeed true that much remains to be known in the immense field of human knowledge, we are fully conscious of what it is that remains to be known, and therefore we are in a far stronger position than those gentlemen who declare that they have received their light from the celestial power. We humbly recognize that there are yet many blanks in our science demanding to be filled, but we become full of hope on seeing that day after day these blanks disappear little by little, and that the hour is at hand when they will be reduced to their smallest expression.

Let us be assured that in reality our present position is strong and grows stronger day after day; that the immense number of facts and laws which the reason of man has already been able to grasp are all connected by a nat-

ural bond of clear logic and evidence. This is precisely the reason why our Japanese and Chinese brothers recognize them, just as our brothers in Great Britain, Spain or Russia. A wonderful thing indeed, that these notions and principles can have been so easily accepted by every lucid brain in the world, without the intercourse of any authority, owing to the mere virtue of their obvious evidence! At the present day there is a vast international movement of thinkers which is growing rapidly both in numbers and clearsightedness, and is already far stronger than the now worn-out fabrics of the various orthodox churches.

Much has been done in the last century, yet much remains to be done. Indeed every one of us, inside of his own individuality, always feels a natural, imperative, unceasing craving for a full understanding of the cosmos in its inward processes which the cleverest scientists in the world are yet unable to satisfy. As soon as a discovery has been made, enlarging the horizon of human knowledge, we immediately perceive in the distance unexpected vistas toward which our unquenchable thirst for truth impetuously carries us. "The known loses its attractiveness," wrote Claude Bernard, "whereas the unknown is always full of charm." There is no truce and no halt, no rest and no peace. Always we are longing for perfection, always we remain restless and anxious as long as something remains yet undiscovered. It is a natural necessity of our condition as thoughtful and reasoning creatures to puzzle our brains about the irritating question, What remains to be known?

When thought and reflection begin to awake in a man, the cosmos appears to him as a mixture of phenomena whose complex and contradictory character prevents him from perceiving the real mechanism. Upon further consideration we feel quite sure that all these various and multitudinous facts have a common and unique origin. Yet we must frankly recognize that, in spite of the theories built

patiently by so many thinkers, this unique cause remains to be found, this impulsive force of all motions is still a mystery. Wonderfully clever while dealing with small portions of substance, our experimentalists are becoming timid, hesitating and confused, and they even commit big mistakes when they venture to deal with the main laws of the cosmos. Even elementary explanations of some well-known facts or phenomena, such as atoms and molecules, ions and electrons, ether and ponderable matter, mass, force and movement, weight and attraction, fire, light and heat, electricity and magnetism, life and death, thought and sensibility, organic and inorganic bodies, are not in the least correlated in spite of so many endeavors; they are all competing and vying with one another in insoluble contradictions; these wrong explanations reciprocally cancel themselves. We may be sure that even our newest dictionaries cannot furnish us with satisfactory definitions of the above-mentioned words.

However difficult it may appear, the giant problem of the unity of substance must be attacked without delay by the help of the latest accomplishments in natural philosophy. At present, the mind wants to grasp a principle which will be duly recognized by all reasonable minds in the very near future as the primordial and efficient cause of that natural world of ours, as a creative and ruling cause, though atheistic and explainable in a purely natural and scientific way as an ever active and ever obeying cause, an ever living and ever varying cause. Indeed, the mind of man is naturally inclined to consider science, though infinitely ramified in its branches, as starting from a unique trunk or springing from a single germ. A unique force, a monistic law compels the sidereal spheres to follow their gigantic orbs through space, and the small material bodies scattered on their surface to share their destiny. In the same way, we understand that the beautiful green of our

vegetals, the sweet colors of our flowers, the gay concerts of our birds and the infinitely varied cries of the terrestrial mammals, the rays of our sun and pale light of our moon, the blowing of our winds and heat of our fires are some of the various aspects of only one substance, whose own nature, always and everywhere, remains identical with itself. We only wish to possess a fundamental principle connecting and correlating all these physical, chemical and organic branches of knowledge, and illuminating them with indisputable evidence.

We wish it and yet *we have it*. Though many monistic thinkers may be yet unaware of it, that fundamental principle has been duly found out, and the great monistic system which is its logical consequence has been built up once for all. Amidst so many timid scepticisms and backward reasonings, a daring and yet perfectly logical genius has definitely gauged and supervised all the renowned theories, eliminating all the wrong contained in them and wonderfully developing all that proved to be solid and really scientific. Careless about the bitter criticisms made at times by some self-important doctors, a French woman, who was a most intelligent disciple of Newton, Lamarck, and Darwin, spent twenty-five years of her life in elaborating a synthesis of natural philosophy such as the world had never known, a splendid work of truth and harmony which sooner or later will be recognized by all as one of the marvels of the past century and the most remarkable monument of science and knowledge ever created by the human race. With unparalleled acuteness, Clémence Royer has found out the very essence of things: she has intuitively discovered the true nature and mechanism of the etheroids; she has mathematically formulated the laws which rule the life of the cosmical substance and conducted her bold, though perfectly logical, inductions to their ultimate conclusions. Owing to the dynamic and substantialist philosophy built

up by Clémence Royer, all the effects whose causes we were formerly quite unable to detect, may be explained now in a quite satisfactory and scientific way. All or nearly all the riddles of the cosmos may be solved and become clear to our minds.

Owing to a logical induction made by Clémence Royer, we have now the striking proof that the substratum of the cosmos is force, substance and mind at the same time, that it is eternal and indestructible, that it fills the whole space with its expansible monads, everlastingly living and active. Owing to such an hypothesis, we understand that the cosmos is a "continuum" in which unities of substance or force are perpetually fighting. These antagonistic forces are becoming movements on the only spots where there is inequality or lack of equilibrium between them.

Thus force, the cause of movement, is a property of the atom. Force is inherent in the atom and cannot be abstracted from it. But it does not spend itself vainly in mad whirlings, as the energetists advance it, without giving any reasonable proof of such a fanciful idea. It does not spend itself in impossible *chassés-croisés* as the Clausius theory ascribes to the gases. Force is not a property of matter explainable by the old theory of inert atoms or mere geometric points separated by voids and without contact. It cannot be an enigmatic and incomprehensible mutual affinity of the atoms, an inherent power which brings them one towards the other and makes them seek one another. None of these various hypotheses has any scientific value; none can give us any satisfactory explanation of the natural phenomena.

If, on the contrary, we admit that starting from the center of the expansible atom its force radiates towards its periphery, pushing off on all sides the surfaces which the neighbor atoms oppose to it; if we admit that these atomic forces, owing to their inequality, have been the causes of

all the various phenomena which we see through the cosmos, then everything may be logically and scientifically explained, and the greatest part of the problems which remain unsolved in the minds of the scientists will begin to be elucidated.

Struggling perpetually among themselves, the atomic forces are mutually canceled wherever they are equal. The balance of the competing forces is set free where there are differences between them. There these differences are turned into motions. The sum total of the forces of the cosmos which spend themselves in motions, viz., the sum of the "living forces," is certainly very inferior to the sum of the forces which cancel themselves because of their mutual oppositions. Further, if owing to a supposed equality of the ethereal atoms both in force and volume only dead forces were present in the cosmos, its various phenomena could never occur. Being filled with actions and reactions all perfectly equal among themselves, the whole of the cosmos would resemble a kind of Nirvana deprived of any cosmical aggregation as well as any conscious existence. It is to the inequalities in expansible force of the unities of substance that the realities of the cosmos are due.

The atomic unity, the center or focus of force, is no longer this geometric point without volume, this tiny grain of sand, rigid, passive, without virtualities, that the atomists imagined. It is not the fanciful miniature of a solar system which the energetist school seems to take for granted and of which it gives us marvelous descriptions. The unity of substance is not a perpetual miracle whose nature and activities are impossible to understand, a mystery forever impenetrable for our brains, a world of dream and wonder much beyond the scope of the human genius. No, the atom is a reality, a living and active individuality. It already possesses in the lowest degree all the properties, all the virtualities of the organic being. It is owing to the oppo-

UMI

sition of the surrounding atomic forces upon its surfaces that an atom may become conscious of its immediate environment. It is the feeling of the atomic forces opposed to its own expansion by the neighboring atoms which causes an atomic unity to react against them. An atom, hypothetically isolated in the midst of a portion of space perfectly void of all matter either ponderable or imponderable, and without any contact with any other atom, would remain deprived of any sensation as well as of any kind of volition or impulsion from its substance. It could never become conscious of its individual existence. The psychical activity of an atom is the result, the logical consequence of its physical activity.

If force is the outward testimony of the atomic activity, a vague dawn of thought and conscience is the inward property of its substance. During the eternity of time, the atom is acquiring a perpetual sensation and consciousness of its environment. All the various sensations constantly felt by its surfaces converge directly towards its center. This science of the infinitely small which it is utterly impossible for us to acquire by direct ways because of the very bulk of our bodies, this science of the universal substratum is obtained by the minute unity of substance. If the tiny unity of substance is wanting in our far-reaching insight, in our variety and intensity of enjoyments, in the breadth, power and superiority of our psychical life, if it is wanting in this relative autonomy which enables us to study all our actions, to direct them in the way we prefer, to master them and control our reflexes when we choose, the humble atom has over the highly organized being the advantage of possessing a concrete and sound knowledge of the inward constitution of substance, which it borrows from the direct, immediate contact of its atomic world, from the convergence towards its center of the various vibrations which are transmitted to its surfaces by its neighbors. Thus the atom

UMI

acquires constantly concrete notions of the intrinsic nature of substance without being exposed to those acute feelings or sensations which our highly complex organisms suffer so often. This elementary life or consciousness of the atom may be compared to dreamless sleep in the animal world when the organic functions are at their lowest.

For the elementary unity of substance, the good, or the acme of happiness, consists in a perfect equilibrium of the pressures supported by its surfaces. Theoretically, the atom of ether, in the intrastellar space, assumes the shape of a rhomboidal dodecahedron, The dodecahedron is for the fluid atom the only geometrical form which allows an ideal equilibrium of the pressures supported by its surfaces together with the smallest possible expenditure of repellant energy. Yet the motions of the sidereal spheres through ether, and the heat radiated by these spheres into space unceasingly disturb the theoretical equilibrium of the ethereal monads, and prevent them from assuming the ideal shape of perfect dodecahedrons. Supporting unequal pressures upon each one of its twelve surfaces, the atom of ether is moving spontaneously, automatically, in the direction of the least resistance. As soon as its dynamic equilibrium is restored, it is brought to a standstill. The principles of ballistics which hold good for all kinds of material or ponderable bodies are not applicable to the unities of the intrastellar ether. The elementary living unities have an ethics of their own, an ethics which we human beings, placed for a short time on the top of the tree of life, should be morally obliged to consider. Not only are these ethereal monads the tiny motors perpetually under pressure which move the immense cosmical machine, but they constitute the greatest part of the universal substance and their number is infinitely superior to that of the material unities as well as to that of the organic cell-souls. It is to this vast intercosmic ocean that death gives back the trillions of vaguely

conscious and relatively free elements which constitute organic life.

In a lesser degree than the ethereal monads, ponderable atoms also possess their elementary psychical properties. In the ponderable or material elements, the atomic consciousness is at its lowest. In such a state, the atom appears to find itself in a kind of lethargy, in which suffering and enjoyment are confused in vague, blind sensations which never disappear entirely. Having for an unknown cause lost a portion, great or small, of their substance, the material atoms remain compressed into aggregations, owing to the pressures on their surfaces of the ethereal monads surrounding them. This being granted, we now see that the interatomic and intermolecular cohesion of the ponderable bodies are not the result of a miraculous and hypothetical attraction which the atom might possess. On the contrary, the cohesion of the ponderable bodies is for their elements a state of uneasiness from which they are ready to free themselves as soon as they can. All the phenomena of expansibility of ponderable matter—vaporization, volatilization, sublimation, even radioactivity—may be explained thus in the most natural and scientific way.

In spite of the fact that the cosmos contains a very small quantity of ponderable as compared to that of imponderable substance, the material aggregations constituting the sidereal bodies are formed of so great a number of atoms that the pressure of the ether on their surfaces is very often sufficient to keep their internal mass in a liquid state. Since these pressures of ether are felt on all points of the surfaces of the stars and planets, they assume a more or less spheroidal shape, as may be seen in our solar system. The differences existing in the pressures of the ethereal fluids surrounding the sidereal spheres and unequally heated by them produce the phenomena of weight and gravity. The differences in the pressures of the ether unequally

heated by the solar heat and by that of the major planets constitute the cause of the phenomenon of sidereal gravitation.

With these elementary notions of atomistic dynamism, we already see that in the field of cosmology as well as in those of biology, psychology, ethics and teleology, the theory of the fluid, elastic, indefinitely expansible unity of substance overthrows a very large number of prejudices and wrong ways of thinking still deeply rooted in the minds of many people, of erroneous notions which had been taught to us as a credo, without taking care to explain the how and the why, of many tabu words and sentences which filled our memory but had no meaning at all for our intelligence. In the same way, such a really unique theory of substance throws dazzling lights on all the sciences of organized life as well as on all those of our human race.

ARISTIDES PRATELLE

CRITICISMS AND DISCUSSIONS.

THE PARADOXES OF PRAGMATISM.

A paradox is defined by a widely recognized authority as "an expression seemingly, though not necessarily, absurd or self-contradictory in its terms." When the intent of its language is readily apparent, the paradox may function as a vehicle for a bit of epigrammatic wisdom, or perhaps as a summary of a point of view. This may be illustrated by Oliver Wendell Holmes's comment on Berkeley to the effect that Berkeley's philosophy comprised two peculiar notions, one being that matter is nothing and the other that tar-water is everything. When the meaning is not clear, it is a potent device for arresting attention and provoking reflection and inquiry. In philosophic discussion the emergence of a paradox frequently marks the spot at which two independent lines of thought intersect. Each line has its own peculiar assumptions and to a considerable extent its own terminology. At the point of intersection, however, the two lines coincide for a moment, and one of the two becomes formulated in the language of the other. Hence the appearance of absurdity or self-contradiction, an appearance which can be removed—or else substantiated—only by a consideration and comparison of the fundamental differences in which it has its origin.

This being the case, it is to be expected in advance that a standpoint or doctrine which contravenes established credos and habits of thought will give rise to a multitude of paradoxes. Since the paradoxes bear witness to the divergence of the old and the new, they may even be used by the later philosophy to emphasize its originality. The classic instance is of course Hegelianism. From the riot of verbal contradiction there presented some have learned, indeed, to look upon all attempts at paradox with disfavor and distrust. To them it has become the index of a silly habit, not to say a disease. It is true that the paradox as an end in itself speedily becomes an offense, yet we can afford to recognize the fact that when employed

UMI

for the purpose of clarifying issues it may become an instrument of considerable merit.

To attempt an exhaustive enumeration of all the paradoxes that may be derived from pragmatic doctrine would be merely an exercise of ingenuity, similar in kind to a classification of all possible forms of nouns or of forms of logical fallacy. Some there are, however, which lie so near the surface that even a casual exploration brings them to view. We note, for example, that the pragmatist avowedly rests his case upon the deliverance of immediate experience, which would seem neither to require nor to admit of explanation. Yet we also find that he feels impelled to devote page upon page to a more or less successful elucidation of what everybody is supposed to know. We experience things just as they are, but in order to experience them we must first change them to something else. Moreover, while things are just what they are experienced as being, we may nevertheless make grievous errors concerning them, and only those who possess the correct criterion of truth and error can hope to be admitted to the temple of pragmatic wisdom. We know the world only in the form of experience, yet experience is but an incident in the course of cosmic events. Or, again, objects are known to us only in relation to the organism, yet these objects existed many ages prior to the appearance of experiencing organisms. The world, we learn, is wholly relative to our human purposes and activities, and from this relativity it is vain to seek escape, for relativity alone is absolute.

It was suggested a moment ago that in such situations the paradoxes have a common root. To explain one is in principle to explain all. Perhaps the shortest road to the heart of the matter is by way of the concept of pure or immediate experience. The most insidious of all philosophic fallacies, according to high pragmatic authority, is that of intellectualism. We easily forget that the intellect is only a tool, that it substitutes snapshot pictures for movement, cross-sections for duration, artificial boundaries and dead rigidity for everlasting flux. To know the real intimately and at first hand we must discard this conceptual machinery and plunge back into the living flow of immediacy. If we thus live the real it will reveal itself to us with a fulness and depth that passes all logical understanding.

On the surface all this may look like the dawn of an era of romanticism in philosophy. It is intimated that the dusty-minded professors who write about what other dusty-minded professors have thought, have had their day; if we are to know the truth, it seems

we must close up those barren leaves and prepare for silent communion, bringing with us only a heart that watches and receives. He that is thus equipped is in truth the best philosopher, the mighty prophet, seer blest, for on him, though deaf and silent, yet glorious in the might of heavenborn freedom, on him those truths do rest, which we are toiling all our lives to find.

Such a philosophy, however, seems to labor under the disadvantage of not being a philosophy. If immediacy is to be our touchstone, we must keep this immediacy intact at all hazards. To rationalize experience, to explicate it or accumulate knowledge about, is to transform it; which is only another way of saying that we substitute a new experience for the original one. But if this be the case, the second experience really tells us nothing about the first. The function of the truth-experience as a leading or guiding or pointing is admittedly something which does not operate through a fourth dimension to lay its hands bodily upon its object. Consequently we are shut in to the experience of the moment, and to say that there are other experiences is not so much true or false as unmeaning. It only remains to apologize for the phrase, "the experience of the moment," which is plainly unwarranted and misleading, since it implies a comparison with other experiences. Better then to desist, lest we fall into the error of the Grecian sage who wagged his fingers and thus blemished what would otherwise have been a spotless career.

Whether this is in truth the outcome of the pragmatic doctrine of immediacy is indeed a different and further question. The deductions that have just been traced have validity only when the pragmatic position is stated from the standpoint and the presuppositions of its opponents. The result of this combination is a fearful and wonderful hybrid, with which the chief of pragmatists disclaims all acquaintance, never, as he says, having met the beast. It is plain that somewhere there exist fundamental differences, which must be unearthed and set side by side, if the appearance of paradox is to be overcome.

What are we to understand by "pure" or "immediate" experience? For pragmatism—if I may venture to speak for it—the appeal to immediate experience as the final criterion means, or should mean in this connection, neither more nor less than the contention that the unknowable has no standing-ground in philosophy. Taken by itself, this doctrine has the amiableness that belongs to things trite and true, but it acquires an edge when followed by the

assertion that pragmatism is the only philosophy which does not operate with an unknown and inconceivable x in its interpretation of experience. To prove this assertion in detail is hardly possible at the present time. Such proof would require a review of the entire controversy concerning the nature of truth. But at all events the pragmatist himself has promulgated a doctrine of truth which, whatever its shortcomings, has never, so far as I am aware, been suspected of maintaining an entangling alliance with a *Ding-an-sich.* His facts are, without exception, definitely specifiable contents of experience. But his adversaries, so he contends, have persistently refused to be specific in defining the nature of truth. We all remember his oft-repeated complaint that, while his own cards are all on the table, he is compelled to play with an opponent who does not choose to show his hand.

As an illustration of the difference in standpoint, we may take the experience of recalling in memory a past occurrence. According to the more typical forms of realism, recollection involves a present consciousness which is connected with the past event by what is usually called the truth-relation. According to objective idealism, the past and the present are united in a time-transcending whole, this whole or totality being absolutely all-inclusive and constituting the basis whereon the truth-relation is founded. The pragmatist, on his part, takes the view that memory *per se* has nothing to do with truth. We have told the whole story when we say that in memory the event is experienced as having been experienced at an earlier time. To an orthodox epistemology a statement such as this is of course a scandal. What we experience in remembering must needs be a representative, or at all events a phenomenon, an appearance. Whether we set the recollection frankly over against the remembered event in a relation of "correspondence," or treat the recollection as a sort of embryonic whole, we must in any case provide a place for the relationship of truth. The relationship of correspondence, however, is; one might almost say by definition, an unexperienced and inexperienceable fact. What we are to understand by "reference" on this basis has not as yet been made intelligible. And the doctrine which holds that truth is a relation between the present experience and the complete, all-inclusive system in which it finds its fulfilment, is in no better case. If this relationship is necessary to give a meaningful character to the present experience, it is evident that the relationship is equally necessary in the case of experiences which, when tested, turn out to be erroneous.

In other words, the difference between truth and error evaporates. Moreover, the relationship in question is evidently not experienced by us, for if it were, we should be able to distinguish truth from error in advance of any process of verification. Nor can it be experienced by an absolute, since for the absolute there is no truth but only immediate intuition. And, lastly, this relation to an ideally complete totality must needs be to a considerable extent "implicit," which places it safely beyond the reach of our comprehension.

Another way of stating the divergence in point of view is to say that the pragmatist holds no theory of experience to be adequate which does not give proper recognition to its character as a temporal flux. Experience, as James says, is "always off its balance," ready at the slightest touch to change into something else. Truth is but a name for the process in which experience undergoes a specific kind of transformation. It is a process, a function, a doing, in which the end is experienced as the fulfilment of the beginning; it is not a static relationship. To treat it as static is to leave out of the reckoning this all-significant character of experience and, covertly or openly, to resign ourselves to the dubious mercies of the Unknowable. Despite the resort to a transcendental, truth finds its criterion in a beyond which is only verbally amalgamated with the present experience; the life of finite beings is hemmed in to appearances, and our ideal of truth "suffers shipwreck at the very entrance of the harbor."*

There is some reason to think that the idealist in particular has been oppressed of late years with the misgiving that all is not well with his theory. He has been at some pains to clear himself of the imputation that his theory is at bottom a correspondence theory; and in response to the gentle prodding of the pragmatist he has repeatedly affirmed that the intellect does not work in a vacuum but is intimately related to desire and will. Yet so long as an "absolute" truth is our criterion, the heart of the matter remains untouched. It is true that the idealist has been insistent these many years that we must have no dealings with what lies beyond experience. But unfortunately this insistence—which bears a certain resemblance to Rousseau's belief that he was the best of men—encounters an old-fashioned prejudice that program and performance should sustain a proper relation to each other. We hear much of system and coherence and rationality and consistency and the like, but what in detail constitutes the truth-relation or how truth is to be distinguished from error, it seems

* Joachim, *The Nature of Truth*, p. 171.

impossible to ascertain. As long as a finished and "absolute" reality or an ideally complete system is our criterion, we are of necessity forced back upon an undefined and undefinable correspondence or "agreement" as the measure of our success; and even the assurance that we are dwelling in the shadow of the sanctuary of absolute truth is small comfort for the futility of our labors. The "correspondence" is a thing-in-itself. Concerning the uselessness of the latter there is indeed much verbal agreement among philosophers; but generally speaking, we have retained the thing-in-itself, in so far as it is embodied in a mental habit, where it is insidious and dangerous, and have rejected it only as an explicitly formulated doctrine, where it is innocuous.

The whole matter becomes much more simple and manageable if we confine the truth-relation to situations in which a question is asked and answered. From this standpoint a recollection as such involves no judgment, no truth-relation to a beyond, no relation of a knower to an object. It acquires these characters only when a question is asked, when a hypothesis is entertained and tested. In such a situation there is no need to refer to an ideally complete experience, for to ask a question is in principle to suggest the process by which the hypothesis may be verified. For example, someone may mention to me a historic incident concerning which I am uncertain whether or not I have heard it before. It has a certain flavor of the "warmth and intimacy" which characterizes recognition, but I hesitate to call it such. "Do I remember it?" In asking the question I am already started on the road to verification. The question is not directed towards the universe in general, but towards certain selected portions of my past. I disregard such matters as the high cost of living, summer vacations and baseball games, and review my stock of information relating to the subject in hand. This process is not subsequent to the question and the hesitation, but it is their origin and source. "Is this object hot?" is not a significant and serious question to me, save in so far as I am already engaged in the act of touching it in order to find out. It is true of course that the test may encounter obstacles and the verification may never be completed. The point is, however, that thinking is not an independent activity, but the handmaiden of our active, non-intellectual activities. The thinking process has indeed its own principles of procedure, which we write down, more or less accurately, in our books on logic. And conformity to these principles is requisite, if the thinking is to attain its purpose. But the thinking is none the

less a tool or device. And the truth-relation has no meaning apart from this process of verification. It is wholly an intra-experiential affair; as Professor Dewey says, "the effective working of an idea and its truth are one and the same thing."[1]

The appeal to immediate experience, then, is paradoxical only from a standpoint which ignores this fundamental character of flux or transformation and experienced leading. Hence the elimination of the beyond reduces our world to an aggregate of unrelated units, since the beyond is charged with the function of providing coherence and unity. From this point of view immediate experience is but a name for fictitious and impossible mental states, and to base a philosophy on them is to make bricks without straw. The pragmatist who knows his business yields precedence to no one in the repudiation of this kind of thing. His immediate experiences are not a string of detached and detachable facts, but are total situations, which are clearly objective, yet knit together in the unity which we call individuality or selfhood. The life of the individual involves continuous adjustment, and in this process the constituent factors of his experience become organized and have their status and value assigned to them. In other words, objects are not "bare" objects, but are what we find them to be by virtue of the function which they fulfil as members of an experiential situation.

From this vantage-ground we may deal more briefly with the remaining paradoxes. To make of any fact an object of knowledge is to change it; that is, to change its value and function—and hence its character—within the individual experience. If we once drop the conceptions of truth previously criticized, this change ceases to be a paradox and becomes a simple and obvious fact. Similarly, to fall into error is not to mistake an "appearance" for a "reality" which lies beyond it, but to mistake the function which the fact in question should properly perform of guiding to a further experience. And this in turn amounts to saying that we can experience things just as they are and yet make mistakes concerning them precisely because reality and truth are not the same.

The remaining paradoxes, which have a more formidable appearance, may advantageously be considered together. Our world, it was said, is wholly an experiential world, in which the bodily organism is an important factor, and yet our human experience is a late arrival upon the scene. Our knowledge, therefore, of pre-experiential facts is of necessity wholly retrospective in character;

[1] *The Influence of Darwin*, p. 143.

and thus the question arises what we are to say concerning those events which eye hath not seen nor ear heard, nor yet enter into the heart of man to conceive until ages after the time when they occurred.

The difficulty raised by this question turns on the fact that, according to the view here maintained, these pre-experiential things or events did not become what we now find them to be until the moment when the experience occurs. It is not until the present moment that they acquire membership in that peculiar context which as a totality we call the individual experience. If it be true that the past is also subject to the universal law of change, we are obliged to infer that the change is not completed until it has reached a culmination in experience. However true, therefore, it may be that we are now dealing with events which are genuinely past, we seem to be the victims of a peculiar hocus-pocus, the upshot of which is that a genuine past is *created* at the moment when the experience of it takes place. Or, to put it differently, we seem to have here a case where knowledge defeats its own ends. We strive to know what things are like prior to or apart from experience, but only to find that the touch of knowledge rivals the transmuting potencies of King Midas or a Bradleyan Absolute.

The difficulty, here as elsewhere, lies in the incompatibility of two divergent points of view. The chief reason, apparently, why the dependence of our experience upon a sensitive organism is considered incompatible with the knowledge of past events is the ingrained tendency to regard the relation of organism and environment as external and mechanical. If the environment is viewed as ready-made and waiting for an organism to be miraculously injected from without and become adjusted *to* it, then any changes which the organism may bring about are necessarily fatal to the purpose of knowing. From the pragmatic standpoint, however, the relation is one of mutual determination. Consciousness, on this view, is not a distinct entity, but a type of behavior, a behavior which involves on the one hand an adaptive organism and on the other hand a change in the environment, of such a kind that it controls or determines the behavior. Consciousness is thus set off from other facts by being identified with that specific process in the environment whereby the conflict of opposing tendencies, instinctive and habitual, is adjusted and harmonious response is sought or secured. The basis of the control, then, is to be found in the attributes of objects, their hardness, their color, their distance, their age, or anything else. As long

as we avoid the objectionable doctrine of mental states, there seems to be no incompatibility between the reference to an experiencing organism and the objectivity of the experienced qualities.

The critic, however, will doubtless point out that this relationship of mutual determination does not apply to a past which antedates the experiencing organism. Even the exigencies of theory are no justification for the resurrection of a past that is long since dead and decently buried, in order to establish the relationship that is requisite for pragmatic knowing. But sober reflection casts a doubt on the correctness of this position. In some sense it is unquestionably true that the past is fixed and unchanged, *jenseits des Guten und des Bösen*. But what is that past of which the present is the culmination and the result? In discussions of time and causation it has been pointed out often enough that the future is not contained in the past as a wall is contained in the bricks out of which it is constructed. It is only a mistaken naturalism that can speak of a formula which will make the future as an open book, a formula which will enable its happy possessor to "read in his equations the day when the Greek cross shall glance again from the mosque of St. Sophia or England have burnt her last bit of coal." No intelligence, however great, could so comprehend a cross-section of cosmic history as to read in it all the details of the future. A given cause is not a cause until its effect has appeared. To call it a potential cause is merely to give it a name. In order to know the nature of anything it must be construed with reference to the result in which it terminates. It is in the result that the character of the cause finds its fruition or fulfilment. The result, moreover, does not simply endow its antecedent with the *name* of cause, but it brings to full reality the cause itself. There is thus a real identity between cause and effect. The character of transition, of coming to be, is precisely what we lose when cause and effect are arbitrarily kept asunder. "What the antecedents of anything are, not what they were, is never fully ascertainable nor fully existent except as we arbitrarily fix a date and refuse to pass beyond it. A world which has had a past is a world which will have a future. Undoubtedly its past was what it was and its future will be what it will be, but in so far as it is an evolution which has continuously a past and a future, its past is alterable and its future therefore indeterminate."[2]

Applying these considerations to the case in hand, we may venture the hypothesis that our knowledge of the past is a fact

[2] Woodbridge, *Philosophical Review*, March 1912, p. 142.

UMI

which stands to its object in the relation of consequent to antecedent, or of condition to fulfilment. Our knowledge of the past implies a change in its object, but it no more creates its object than any effect creates its cause. The past, like any other object of knowledge, acquires its status within our organized world of experience through a process of redetermination and thus appears in a rôle that is new. And if the process called knowing is genuinely an activity or change in an environment and not a passive mirroring of things, there seems to be no valid reason for calling the knowing "subjective." As was suggested before, the change in question is of such a kind as to read off the nature of things in terms of behavior. Whether we consider situations of simple attention or situations that involve deliberation and choice, we find a peculiar correlation of object and response which gets adequate recognition from no other theory. That experienced objects should inevitably function as constituents of a situation so completely permeated by the "personal equation" is not a fact to be deplored, but is precisely what is necessary to realize the end for which the experience takes place. It is only by becoming constituents of such situations that objects can reveal themselves. To ask what things are like apart from this change is like asking what a cause as cause is like apart from its effect. The cause as cause is a condition of the effect, and similarly the past must be described as a condition of the present experience.[3] True knowledge is adequacy of function in the control of response, and apart from this it can have no defensible meaning.

Experience, then, regarded as a temporal event, means that the things experienced take on a peculiar function, having reference to the control of bodily response. This function is part of the bone and tissue of things as experienced. As was indicated in the discussion of the truth-relation, the experienced object is immersed in the "free water of consciousness"; its being is a perpetual becoming; it never passively exists, but constantly acts. This intangible character of experienced objects, which we mutilate in the very description that we give of it, is what constitutes the experiencing of objects. Since experience is not imposed upon objects from without by the introduction of a distinct something called consciousness, but is a change which the objects undergo in order to guide more efficiently the behavior of organisms, the question whether this change

[3] Cf. Dewey, *Journal of Philosophy, Psychology and Sc. Methods*, 1906, p. 253.

UMI

conceals the nature of the objects can hardly be considered relevant. The change is precisely what makes possible both the question and the answer; as James remarks, there is no difference between the object as it was and the object as it is, when once the question is asked.

It is along these general lines that pragmatism seeks, and must seek, to reconcile the relativity of our experience to the bodily organism with genuine objectivity. Whether it can give a consistent interpretation of all the facts which it behooves philosophy to consider is a question which the future alone can determine. The only criticism, however, that can be effective is a criticism which meets it on its own ground, for in philosophy of all subjects there is a sad truth in the remark of Mrs. Carlyle that "it is the mixing of things that is the great bad."

B. H. Bode.

University of Illinois.

PROFESSOR JAMES AND THE PSYCHOLOGY OF RELIGION.

The psychology of religion is the distinctly American contribution both to psychology and to the study of religion. The Germans have now taken up the subject in their characteristically thorough manner, and a journal, *Zeitschrift für Religionspsychologie*, is being published, whose purpose it is to collect authentic data of the religious experience. But it still remains true that one needs only English in order to read the authorities in this field.

To Prof. William James more than to any other worker in this field is to be ascribed the wide present-day interest in the psychological study of religion. *The Varieties of Religious Experience* appeared only eleven years ago, but within this brief time a new branch of psychology has been fully established and a considerable literature upon the subject has sprung up. At least two other important studies had been published before this one, but it was only with its appearance that a clearly defined and wide-spread movement was started, the object of which was to collect, analyze and describe the data of religion, and to attempt to interpret and evaluate these data in their relation to the rest of human life.

Professors Starbuck and Coe[1] seem to have been the first psy-

[1] E. D. Starbuck, *A Study of Conversion*, 1897, and *Psychology of Religion*, 1899; George A. Coe, *The Spiritual Life*, 1900.

chologists systematically to collate and study large numbers of cases of the religious experience. Professor Pratt has also done good service in this direction. They used the questionnaire method for gathering their data. Coe confined himself to his own students and to classes of religious people of which he had personal knowledge, such as the ministers of a Methodist Conference. This is a safe method, for his personal knowledge of the bias of his "subjects" helped him greatly in drawing right conclusions. Starbuck has also shown a caution in using haphazard materials which later collectors might well imitate.

Those who have worked with President G. Stanley Hall, of Clark University, have sent carefully prepared question forms broadcast and have thus obtained answers from people of many classes and interests. This method of collecting general and uncritical answers from a large number of unknown people may have some value, but in reading the results I have thought that these replies show how people will respond to set questions rather than reveal the real meaning of religion in human lives. Such replies concerning such an intimate experience as conversion may reveal certain general types of this experience, but it is certain, I believe, that the one thing not revealed by such a collection of answers will be the essential meaning of the religious experience. In the lot there will be some serious and valuable answers, but how are these to be recognized?

There can be but one way to get valuable results by this method, and that is for the student of these replies to have in himself a right standard of what a religious experience ought to be and for him to apply this, his personal standard, to the cases he is studying. This is not high-handed imposition by the investigator of his personal religious taste upon all these data gathered from many other lives, for this bringing the religious experience under question to the bar of his own religious consciousness is the only possible method by which significant results can be had from such a study. This is what all of these collectors of answers about personal religious experience are forced to practise, although some of them do not appear to be conscious of their real situation. Otherwise the collection of data proves to be but a meaningless jumble.

The method of Professor James is much more fruitful. He selects a number of positive cases of religious experiences and tries to analyze and to understand the significance of these. He approaches a case from different points of interest, until one feels that he has

UMI

gotten all out of that experience that one man can get out of another's report of his interior experience. He announces at first that his is to be a study of personal documents. He invites us to attend to a psychologically "descriptive survey of those religious propensities" of man, "those more developed subjective phenomena recorded in literature produced by articulate and fully self-conscious men, in works of piety and autobiography."[2]

In the twenty lectures of his book Professor James treats a variety of religious experiences of widely varying types. He frankly chooses radical and unusual types of religious experience, thinking thus to get the thing he is after better isolated for purposes of study. Many objections have been raised to this method of selection, it being claimed that the result is a caricature of religion, just because eccentric and abnormal instances are presented. This criticism is just in part, for we do not have here a complete account of religious experience, and the cases cited are so pronounced as to give a decidedly wild complexion to experienced religion. However it can not be denied that the cases given are true religious experiences, and some of them are typical of large classes of religious experience.

Professor James's volume means to be a psychology of religion. It cites cases and talks about these, and yet there is little formal psychological analysis of the experiences given. In these pages there is clear analysis of religious experience, but it is of a broadly sympathetic sort rather than a minute scientific scrutiny of particulars. The usual order of the study is, first some brilliant paragraphs on the subject in general, as those on "Saintliness," which show profound insight into the meaning of the experience, and then a striking case is cited. But the cases are given as confirming the insights, rather than being so much data from which conclusions are drawn. The experiences cited impress me as being striking and interesting stories which our author is telling us between periods of intense study of our subject. These anecdotes illustrate aptly the point we are considering but they were not strictly necessary to the progress of the study.

In speaking thus I do not mean that the cases cited are not authentic cases, nor that they are not enlightening. They simply do not impress me as of great importance to this study. The real study here is not of these varieties of religious experiences, but it is the problem of the meaning of religious experience itself. The contribution made here is not that of a scientific investigation of par-

[2] James, *The Varieties of Religious Experience*, p. 3.

ticular instances of religious experiences. The real value of this book is in the record which it contains of the religious insights of a man who has a great genius in the sympathetic interpretation of human life. James's comments upon the experiences of others, acute as they are and usually true, tell us much more about James's own inner life than they do about his subjects. As announced at first, this book is a study of human documents, and fortunately for us the documents are mostly written out of the sympathetic insight of the author himself.

In reading Professor James's general work on psychology I am continually astonished by his penetrating and unexpected analyses of the contents of consciousness. Scarcely any element of consciousness, however unusual and undefined, has escaped his notice and appreciation. So intimately revealing are some of his insights that they produce an uncanny feeling in us, and we wonder who has revealed to this scientist our dark thoughts which until now have lain half-hidden and unformed in our own conscious mental processes. Such revelations as these are the result of a genius for noting the unusual in human experience.

The employment of this ability to see the unusual and half-formed elements of consciousness results in a valuable contribution to the general field of psychological observation. There is danger however that the results of such insight into the hidden places of the mind will get over-emphasized. We are so fascinated by being introduced to queer parts of ourselves, whose existence we but vaguely suspected, that we are liable to forget that after all these oddities do not constitute a very large or very influential portion of our every day working characters. We needed a genius to reveal to us these outlying possessions of our conscious life, but now we need to use much common sense in order not to waste too much time on these peripheral interests, thus neglecting the vastly more significant central experiences of our lives. It is doubtless one of the temptations of psychology to emphasize too much the unusual and abnormal life experiences, for these stand out and challenge attention.

The above is a general criticism which I wish to apply to *The Varieties of Religious Experience*. The instances of religious experience selected here are true instances. They are more than usually interesting, perhaps just because they are so various. But the cases here selected are too unusual to afford a basis for any very general conclusions as to religion. These unique and even eccentric experiences can not fairly be said to represent the experiences of re-

ligion which is the directing force in the lives of an unnumbered multitude of present-day men and women. And even in the lives of the men and women cited, these experiences were but moments of unusual exaltation, and not the daily religious inspiration by which they lived out their lives. It is valuable to know about these striking religious experiences, but a great number of deeply religious people shake their heads and say that this is not what they mean by religion. Professor James could have obtained much more valuable, but doubtless much less interesting, material without going so far afield. But as I have said, these selected instances do not very much affect the truth or value of Professor James's treatment of religion, for his knowledge of religion came but slightly from these cases.

The great value of Professor James's work is that it forces upon the attention of students of religion the religious experience itself. Since this movement for the psychological study of religion has been launched it will never be quite as easy or comfortable again for theorizers about religion to pursue their way all heedless of the central fact of their subject. It is significant that just in a time when the theoretical explainers of religion, and many of the preachers of religion, had made up their minds that religious conversion was an emotional illusion, the psychologists came forward with irrefutable proofs of the reality and value of this experience. Thus science, which had been thought to be the enemy of religion, came to its rescue.

The five essential elements of the religious life, which Professor James gives in his conclusion, are admirable.[3] But this summary does not come from the variegated cases of religion cited in the special sense in which the author indicates that it does. This knowledge of religion comes from a profound and sympathetic understanding of religion as a whole, and in the last analysis this sympathetic insight is due to a personality peculiarly gifted for such understanding. The method used in this book can scarcely serve as a model for those who continue the study of religion in the empirical spirit. This work, by its character, is necessarily only a beginning. It has served its purpose of shocking the rest of us into a proper attention to the religious experience, but a much more careful and fundamental analysis of this experience is now necessary.

I think Prof. James H. Leuba has gone as far in the psychological method of studying religion as any other. Leuba objects to

[3] *Ibid.*, p. 485.

both the "intellectualistic and affectivistic conception of religion," for neither an intellectual interest nor a feeling can explain the origin of religion. Religion arises out of man's distinctive characteristic as "thinking desire" in the Aristotelian sense.[4] He says that "active religion may properly be looked upon as that portion of the struggle for life in which use is made of the power we roughly characterized as psychic and superhuman."[5] Religion arises from the same natural spring as does non-religious life, i. e., the "will to live," and the only ground for differentiation between the religious and the secular is in the nature of the forces which religion attempts to press into service.

That which differentiates religious life from all other expressions of man's life is not a specific feeling or emotion, nor yet a distinctive impulse, "for there are neither specifically religious motives nor specifically religious feelings."[6] A feeling is just a feeling, no matter what its cause. So religion is characterized only by the peculiar kind of power which it seeks to employ. "There are but three necessary attributes to a religious source of power. It must be a psychic, not a physical power; it must be accessible to man; it must be superhuman."[7]

So religion is an attitude which runs through man's whole life, intellectual and emotional. Religion is not a state either of mind or of emotion, but is one of the ways by which a man seeks his life. It is "a belief in a great and superior psychic power—whether personal or not. A dynamic relation between man and that Higher Power tending to the preservation, the increase and the ennobling of life."[8] Man's thinking, willing and emotional activities are all concerned in the religious attitude.

Now it is evident that Leuba did not reach his conclusion as to the nature of religion by means of psychology in the ordinary definition of this science. Religious feelings are just feelings, like others, he has said. So a psychological analysis of these feelings yields nothing different from that found in the other feelings. No such analysis can find out what is the nature of the object toward which these emotions are directed. Where did Leuba get his definition of the God or "Power" of religion then? To be sure he could

[4] Leuba, *The Psychological Origin and Nature of Religion*, p. 6.
[5] *Ibid.*, p. 93.
[6] *Ibid.*, p. 14.
[7] *The American Journal of Religious Psychology and Education*, Vol. II, p. 325.
[8] *The Psychical Origin and Nature of Religion*, p. 92.

UMI

have found out by empirical observation that religion seeks to employ a different kind of power from that sought in the ordinary life of man, but he does not stop with this observation as to the direction in which religion seeks to go, for he says it is a "dynamic relation between man and that Higher Power." Thus he knows much about religion, but he does not explain by what method he obtained his information.

Psychology can help us in our study of religion, just as anthropology can, by giving us an array of dependable facts concerning religion. The facts gathered by psychology deal with the inner life and are thus nearer to the real center of our interest. But if Leuba is right in maintaining that there are no distinctly religious emotions and feelings then the science of psychology can not carry us very close to the real solution of our problem. Religion itself still eludes us, for we are only psychologizing about the effects which religion produces in the life. The cause of these effects, religion, would always remain unknown.

Leuba says that in his opinion "the amazing discrepancies and contradictions offered by authorized definitions of religion arise from a faulty psychology."[9] To this I agree in part. The definitions of religion with which I am acquainted are all true, as far as they go. Their undependableness arises from their onesidedness, and this may arise from neglecting the psychological side of the study of religion, or from neglecting the ethnological side or the philosophical side of this study.

In the psychology of religion the psychological analysis is not the simple scientific operation which it is usually assumed to be. If the feeling, willing and knowing of religious experience are just common feeling, willing and knowing, then the mere psychological analysis of the religious consciousness will reveal nothing as to the distinctively religious aspect of the experience. The psychophysical parallelist would say that this is just the situation, for that essential meaning or value which constitutes the religious element in the experience can not be reached by the methods of psychology because that value lies not in the existential world but only in the realm of appreciation.

We have just here a good example of how this parallelistic way of explaining human experience must break down. This evaluation is also a fact of consciousness. If our methods of psychical analysis do not reach this item of experience then they must be extended

[9] *Ibid.*, p. 5.

until they can reach it. To be sure the evaluating factor of consciousness is purely subjective, i. e., can only be certainly known by the experiencing consciousness itself, and therefore can only be found by the introspective method of analysis. Each person must find his own religious value within his own experience, but having found it he then has a standard of value to which like experiences in other lives may be referred.

The answer is made that no one can observe this value judgment in any experience except his own, because it is entirely subjective. But this is not quite true, for all conscious experience is in this sense entirely subjective. We can not tell that a man has a feeling of pleasure by any direct method of observation. It is only by referring what we observe of the man's mental state to a standard of pleasure which we have in our own consciousness that we can judge him to be pleased. So there must be this reference to our own personal experience in order to judge the results of any psychic analysis. In studying the religious value judgments of other lives we have simply an extreme case of this necessity of reference to a subjective standard.

In studying the life of another we come upon certain phenomena which we recognize as religious, and we know this part of his experience to be religious because we ourselves have had a similar experience and know what it means. This is a species of immediate recognition, for our religious standard has become so a part of our consciousness that through it we immediately recognize that which is like to it. This is not just reasoning by analogy, i. e., when I acted as this man is acting I felt so and so, therefore he must feel so and so. While our knowing the religious value judgments of other people is in a general way by analogy, yet this is usually not an elaborate reasoned process but rather an immediate recognition that what he now has is what we call religion.

Thus we can know more about another's religious life than that it shows certain marks or has characteristic direction. We can observe more about the religious consciousness of another than that it strives to reach a peculiar object, e. g., one that is psychic and superhuman. By sympathetic interpretation and an imaginative entering into this experience of our fellow man we know what his religious life means. This recognition is of the general type of poetic interpretation, only it is more intimate and serious because the issues are real and solemn. It was by this method that Professor James arrived at his wonderful insights as to the meaning of the

religious experiences of other men. It was not necessary for him to have in his own life all those eccentric religious experiences which he so truly describes. It was enough that he had in his own experience the touchstone of interpretation by which he could sympathetically enter into and illuminate those heterogeneous experiences. To this, of course, he added a genius for expression.

Unless the psychology of religion is willing to remain a formal description of the external psychic manifestations of religion it must extend its scope by frankly including this method of interpretation by intimate personal reference. Otherwise it can not at all give the meaning of religion. But no psychologist has been content thus to limit himself in his study of religion. Leuba, one of the most carefully scientific of them all, ends by defining religion as a dynamic relation between man and God.[10] After all it is the real meaning of religion which all students of it wish to find out. This being no less true of the psychologist than of other investigators of religion, he had best openly avow and carefully employ the only method by which the true nature of the religious life can be found.

This more thoroughgoing method of studying religion, which I can only suggest here, is not one of mere introspective analysis. Such self-examination is the initial step in this method. One must come to an understanding with himself as to the meaning of religion, and this will be impossible if he has no personal experience of religion. But this personal standard must be tested by all possible methods of outward reference to the phenomena of religion. We must seek to know what religion has been historically in its various stages of development. We must analyze psychologically many types of religious experience to see what religion has been in the lives of other men. These phenomena must be philosophically interpreted that we may see their connections with other regions of men's interests. Thus by the employment of all means at our command are we to seek to know the essence and meaning of religion. And it is fundamentally important to have in mind what particular method we are using at any given stage of our investigation and to conform to the limitations of that method. But in the use of no method, however scientific, will the investigator ever be able to get away from the necessity of direct reference to the individual religious consciousness.

EZRA B. CROOKS.

NORTHWESTERN UNIVERSITY.

[10] *Psychological Origin and Nature of Religion*, p. 90; also *American Journal of Religious Psychology and Education*, Vol. II, Nos. 2-3, pp. 312-313.

MADAME CLEMENCE ROYER.

Madame Clémence Royer, an eminent scientist and philosopher, was prominently before the French public during the last quarter of the nineteenth century. She received much recognition from scientists and men of letters, but since her death she has been almost forgotten. *The Open Court* contains some of her contributions (IV, 2413; 2426) which were mainly criticisms of the editorial view, and the editor made her personal acquaintance in Paris in the summer of 1900. His reply to her criticism has been incorporated in his *Fundamental Problems* (pages 324-332). Portraits of Madame Royer, taken in 1865 and 1899, were published in *The Open Court* of September, 1900.

M. Aristides Pratelle revives her memory in the present article on "Atomistic Dynamism," under which caption Madame Royer's theory might be summarized, and we gladly offer our columns for the presentation of the philosophical system of this distinguished woman as presented by an independent and intrepid follower, who speaks in the name of an organization devoted to the propaganda of Madame Royer's synthetic philosophy.

We will say that Madame Royer's theory is remarkable mainly on account of the mathematical and scientific substructure upon which it rests, and also the detailed elaboration of her views in which one recognizes at once an author who is well posted in contemporaneous science. Although we admit that we agree with her in many respects and do not hesitate to approve of the monistic tendency of her work, we are nevertheless at variance with her propositions on several most important points.

First of all we take little interest in the oneness of the substance of the universe. We believe that the oneness of substance will ultimately be proved. We do not assume that there is a plurality of divergent ether atoms, or that there are several ultimate substances of which the world consists. We think that ultimately the substance of reality from which this marvelous cosmos has developed is throughout the same, and yet we deem it of little consequence, because our monism is not built upon the theory of oneness of substance but upon the oneness of law, the oneness of those uniformities which dominate the development of existence and produce the cosmic order in which every formation appears conditioned by cause and effect. All becoming is transformation and the laws of form are

UMI

the means by which we trace the necessity of all events under definite conditions.

In a similar way we take less interest in upholding the theory of atoms as an essential part of the monistic or scientific world-conception. The atom in our opinion is a convenient mode of representing certain proportions in the specific weights of chemical substances, and it is very probable that there are definite and discrete portions in which these small aggregates of matter are combined and interrelated with others of different kinds and qualities. We might, though not without hesitation, let the statement pass that the atom is a "living and acting individuality" if we take the word individuality in the sense of being a definite, discrete thing, but we object decidedly to the proposition "that the atom possesses already at the most inferior degree all the properties, all the virtualities of the organic being."

We have repeatedly insisted on the obvious truth that combinations produce new qualities. As in mathematics the idea of a triangle can not be deduced from the idea of the line, so the character of a steam engine can not be derived from the parts of which it consists, nor from the properties of heat. A new combination possesses new qualities and the new qualities which originate by the combination will account for qualitative differences in existence. The idea that everything must be measured quantitatively in order to admit a scientific explanation is an error. The different things in the organic world and also in the domain of psychology, the different beings possess different qualities, and these qualities are the most important part of existence. Thus there is no need of saying that all the phenomena of higher life, or organized nature, of the soul and even of social interrelations should exist in an inferior degree in the atoms of inorganic existence.

Though we do not agree with Aristides Pratelle, and with some of the most important aspects of Madame Clémence Royer's atomistic dynamism, we believe that she has not received the attention due to her, and the recognition of her philosophy has been out of proportion to that of other philosophers who were inferior to her extraordinary abilities. It is not impossible that this neglect is due to the fact that being a woman she was not deemed of sufficient importance to be taken seriously. For this reason we are glad to take this opportunity of having M. Pratelle explain the proposition of this monistic conception which seems to find a potent support in the new

theory of liquid crystals, the nature of which has been lately much discussed.

In the *Literary Guide* of September 1, there appeared an excellent biographical sketch of Clémence Royer from the pen of Mrs. Hypathia Bradlaugh Bonner. It is distinguished by brevity and completeness giving a vivid account of this remarkable woman's intellectual development, and we deem it a service to our readers to reprint it here in full. We would call attention to the strange fact that those who struggle for the liberation of the human mind are generally distinguished in their early life by a strong religious fervor which goes far to prove that the ultimate motive of liberal leaders is of a religious nature.

* * *

Clémence Auguste Royer, economist, anthropologist, mathematician, physicist, and uncompromising rationalist came of a profoundly religious and royalist family, and was born at Nantes on April 24, 1830. She was educated at the Convent of Sacré Cœur, and is said to have been destined for a religious life. In 1854 she visited England, and during her stay there she made herself acquainted with the English language and literature; two years later she left that country to go to Switzerland. By this time her eyes had become opened to the errors and evils of Catholicism; but, although she rejected the authority of the pope and ceased to believe in miracles, she was still so deeply religious that in the summer of 1856 she resolved to follow exactly what she supposed was the practice of the Christianity of the first three centuries. Following up this idea, she conceived what she herself later called "a childish dream, the fruit of my monastic education," of living an anchorite life, and in solitude awaiting prophetic inspiration.

Passing through Lyons on her way to Switzerland, she proceeded to give effect to her ideas by devoting nearly the whole of her little patrimony to succouring the distressed victims of the inundations of the Rhone. Had she not been restrained by her family, she would have given all. As it was, she arrived at Lausanne penniless; but, fortunately, she was a clever needlewoman, and obtaining a poor lodging at fifty centimes a day she supported herself for a time by her needle. Lausanne, however, was not exactly suitable for a hermitage, so she determined to go to the Tour de Gourze, a lonely spot which she remembered to have visited with her family as a child. Here, at an isolated farm inhabited by an old couple, Clémence Royer took up her abode, paying twenty francs a month

UMI

for her board and lodging. Her room was small and bare, but from the window she had a magnificent view of Lake Geneva; her meals she took with the old people, who lived with the utmost frugality.

Once settled at the farm, she began to reflect upon her position, and it was brought home to her that it was only because she was prevented from obeying the injunction to give away all she had to the poor that she was able to pay the farmer the trifling sum required for her bed and board. It appeared, therefore, that it was not possible to take Christian teachings literally in the nineteenth century. But if Christianity was impracticable, could it be divine? Putting this question to herself, she submitted the Gospel teaching to examination, and came to the conclusion that it was contrary to the economic condition of society, and, in fact, so absurd that anyone who tried to carry it out would be looked upon by Christians themselves as crazy. This was sufficient; she was cured of her desire to become an anchorite. But, having arrived at this point, she suddenly felt isolated, cut off from the rest of her world, from her family, her former teachers, and the books upon which she had been nourished. One thing remained to inspire her then and throughout her life—her faith in truth, and in the possibility of discovering it. It was to this task she resolved to devote herself.

She made arrangement for a service of books from the library at Lausanne for the small sum of twenty-four francs a year, and her work of education began first by dismissing from her mind all that she had already learned, and then by studying as far as possible in the originals the latest works she could procure in science, history, and philosophy. In this way she passed the winter of 1856, entirely alone save for the two old people of the farm and for the infrequent occasions when she went into Lausanne to consult the library catalogues. It was a walk of about seven miles, and she went in in the morning, returning unafraid, by steep and lonely paths, in the darkness of the winter's night. After twenty-two months of this secluded and studious life, Clémence Royer was as one new-born; she had shaken off the last shreds of her belief in Christianity, and had reached certain rational principles of philosophy, which she continued to affirm and develop during the rest of her life.

In 1859 she left the farm, and went to live in Lausanne to be near the library. In the following year she gave a course of logic and philosophy for women, in which she maintained the theory of evolution; this being the first course of rationalist philosophy ever

given in French Switzerland. About this period also she contributed a series of articles to the *Nouvel Economiste,* founded by Pascal Duprat, a refugee from France, to whom she became united. In the year 1860 the government of the Canton de Vaud, anxious to discover a rational and equitable system of taxation, involving the least possible friction, yet providing the revenue necessary for good government, invited economists to compete for a prize on this difficult subject. Clémence Royer entered for the competition, and the prize was awarded to her jointly with Proudhon. Is seems a strange irony that Proudhon, who declared that women ought not to be considered responsible before they had attained the age of forty-five, that they were incapable of genius, and that there were only two rôles open to them, those of courtesan and housekeeper, should have had to divide a prize with a woman upon such a subject as "Taxation." Clémence Royer's treatise was published in 1862, and makes a massive volume of 750 closely-printed pages; for, although it was written in response to the special needs of the Canton de Vaud, the subject is treated in the widest possible manner. It is no mere dry treatise of figures, but is an exceedingly interesting review of the origin, general theory, and differing practice of taxation.

Hardly had this work left her hands than this young woman of thirty-two, bred in the narrowest Catholicism, proceeded to a task with which her name must be ever associated—viz., the translation, with Darwin's authority, of his recently-published *Origin of Species.* The translation appeared in Paris in 1862, just three years after the original publication, and it was through this translation that the French reading public first made acquaintance with Darwin. Mademoiselle Royer introduced the subject to her readers in a notable preface of some fifty-four pages, which she was inspired to write in response to the violent attacks made upon Darwin and his German translator by the clericals in England and Germany. The clergy everywhere, she said, pretend not to be the enemies of science; if one may believe them, they would even protect it, provided it would consent to stay docilely within the limits they lay down. They had, however, learned by experience that there is hardly a conquest of the human mind which has not encroached upon their domain; not a discovery which has not made a breach in their system. It had been contended on Darwin's behalf that his theory was not antagonistic to religion; but Clémence Royer's nature detested all ambiguities, compromises, or evasions, and she declared it to be

profoundly heretical; as heretical as the theories of Lyell, which abolished the universal deluge; as heretical as Newton's gravitation and the Copernican system, which denied the star's power to guide the Magi to the cradle of the Messiah, and would not allow Joshua capability to stay the movement of the sun. This preface, the whole of which well deserves translation, aroused a considerable storm among orthodox people, but decidedly enhanced the reputation she had already made by her book on taxation.

No sooner was her translation of Darwin's masterpiece launched than Clémence Royer began another work, and in 1864 she published in Brussels a philosophical romance entitled "The Twins of Hellas," which seems to have been prohibited in France. In the same year also she wrote an Italian essay upon "The Future of Turin." Six years later she published what was for long considered her ablest and most original work, "The Origin of Man and Society," in which she reaffirms the rational scientific theory of evolution and traces out the origin and development of life and thought upon earth, and the history of man as individual, and of human societies. This was followed by several other essays, displaying great research and originality of thought, such as "Funeral Rites in Prehistoric Times," "Hypothesis of Heredity," and "The Good and the Moral Law," besides many valuable contributions to the French General Encyclopædia, and to anthropological and economic reviews.

Always a student, and always eager "to combat the proselytism of the absurd by the proselytism of common sense," in 1900 this remarkable woman, having reached her seventieth year, brought out her last great work, the crown of her career, the result of five-and-twenty years' labor. This book—a thick volume of 800 pages—is entitled *La constitution du monde; Dynamique des atomes; Nouveaux principes de philosophie naturelle.* In the preface to this last work of hers she takes vehement exception to the use of the term "unknowable." Her vigorous mind loved bold affirmations; she had no sympathy with hesitating or half-hearted acceptances of great truths. She thirsted to understand all, to explain all; she refused to admit the "unknowable." The only unknowable to reason, she said, is that which does not exist. There is nothing incomprehensible but the contradictory, which is the impossible. The things which science will never know are the wild visions of the human imagination, which seeks to give reality to its ignorance; fantastic dreams of the night taken for the realities of the day; errors born of falsehood and exploited by credulity.

In her old age life was not kind to Clémence Royer. On the fall of the Empire, Pascal Duprat was able to return to France, when he was elected deputé, and Clémence ably seconded him in his political career. But Duprat died in 1885, and Clémence, by degrees, fell into ill health and complete poverty. Her last days were passed in the Asile Galignani, where she died on February 5, 1902.

To-day, as we recall the sanity and vigor of her intellect, the simplicity and clearness of the language she used to explain her ideas, the devotion and loyalty with which she consecrated herself to the search for truth, we feel that her name should be written in letters of gold on the imperishable roll of the servants of rationalism and humanity.

THEONOMY.

WITH SPECIAL REFERENCE TO DR. T. PROCTOR HALL'S "SCIENTIFIC THEOLOGY."

Believers in God find it more and more difficult with increasing scientific knowledge to retain the old theism, and so they either turn atheists or modify the old conception of God into one that is more or less scientifically tenable. On another page of this issue we have a remarkable example of this latter tendency in the article "Scientific Theology" presented in elegant brevity by Dr. T. Proctor Hall, a man whose knowledge in the natural sciences has rendered it difficult for him to accept the traditional God-conception of orthodox Christianity, and yet who is not shallow enough to be satisfied with a crude materialism or the current atheism of to-day, and truly his aspiration is justified. The traditional God-conception has stood for great realities in the endeavor of progressive mankind, for the ideals of social justice and the attainment of truth. The idea of God thus formed was certainly not in vain and must have served—yea is still serving—some good purpose in life.

The neatness with which Dr. Hall builds up his philosophy is admirable, his elucidations render his thought plausible and even acceptable to those who incline to his way of thinking, and yet his method is fallacious and some of his arguments lead him astray, so that we here propose to point out briefly the mistakes from which his presentation suffers. However, we will find that, after all, his ideal of preserving a God-conception can be maintained, although the God-conception which we consider as delineating the God of science would be somewhat different from his, but in many

UMI

respects it preserves the old traditional conception of God even more faithfully and better than his.

What Dr. Hall calls the cosmic elements had better be called ultimate universals, and he ought not to arrive at their conception either by assumption or any haphazard enumeration. The procedure by which we propose to discover ultimate universals would be that of abstraction and generalization. We must start according to the positivist principle from the facts of experience. We analyze our experience and systematize different qualities under different heads, and again, the different classes that belong together as different categories, until we reach an ultimate, beyond which we cannot go.

In thus systematizing the characteristics of our experiences, we reach not one ultimate generalization, but three: substance, energy and form. Under these three heads we can subsume all features of the innumerable things that present themselves to our experience in the objective world. Dr. Hall first enumerates four, (1) time, (2) space, (3) matter, and (4) energy. But we regard time as the purely formal element of energy, and space as the purely formal element of matter, and so we suggest to replace Dr. Hall's four elements by three ultimate generalizations, (1) matter, (2) energy and (3) form, whereby it is understood form includes every kind of relativity, not only shape or figure, but internal interrelations or structures as well, and also that uniform idea of motion called time, the units of which can be counted to determine duration.

We repeat that the whole objective world possesses everywhere in its constitution these three universals, or as Dr. Hall calls them "cosmic elements," form, substance and energy. Nowhere is there any objective existence which does not partake of all three at once.

The "three ultimates" is a term which means that the object confronting us in our experience is (1) real, i. e., it exists independently of us; viz., it is objective; it consists of substance or matter. Further, (2) it is actual, i. e., it acts or reacts; it possesses energy; it moves; it suffers the impacts of motion and in return gives out impulses; it causes motion; and finally (3) it is of a special kind, of a definite form in space and time.

There is a peculiar aberration in philosophy called agnosticism according to which man does not know and never will know what matter is and what energy is. Agnostics are not aware that there is nothing to be known about either matter or energy. These generalizations are simply the *that* of existence. They are not unknown

quantities, but the universal feature of existence denoting what all things have in common. It is not strange that we should know what gold is and what iron, or wood, or sand is, but that the quality which all these things have in common should be inscrutable! By matter (or better "substance," wherein we include ether) we understand existence in general and we grant that while science is or may be able to trace the form of our present existence from the form of prior states, we can never explain why there is something at all, and why there is not in its place nothing. That existence exists and that it acts, that something is going on, is a fact, and the question why existence exists is an illegitimate question.

Science does not concern itself with the question why existence exists. It investigates the nature of existence by studying its forms and tracing its transformations. Thus the third quality of things, their form or suchness, is the most important quality of existence. There is nothing to be known about the innermost being of matter or of energy. There is no philosophical problem about either. Both are simple statements of fact meaning that a thing is and that it acts. All truly scientific problems deal with the form of existence, and the purpose of all knowledge consists in tracing how forms originate from prior forms and how they change according to the laws of form. If we can trace them to a uniform primordial condition of the ultimate world-substance and can show the whirls in which the actual elements of matter originate from this primordial world-stuff (presumably the ether) by some unexplained commotion, we have reached the aim of the ultimate problem of cosmogony. There are no problems in the conceptions of substance and of energy. Energy is simply change of place—or rather the activity in the change of place, which however is ultimately the same thing.

So far we agree in the main with Dr. Hall. We have only simplified his cosmic elements and reduced them to three ultimate generalizations. They cover the whole realm of objective existence. But, as he correctly states, there is another cosmic element, the existence of which he concludes from the sporadic appearance of consciousness, and it is in this connection that we find the ultimate source of his error.

First we must notice that in speaking of consciousness we enter into an absolutely different domain of our experience. No consciousness can be discovered in the objective world. Consciousness is a purely subjective phenomenon. For all we know it need not exist at all in the objective world. The objective world is char-

UMI

acterized throughout as matter changing form. It is true we assume that creatures like us are ensouled with the same feelings according to their bodily form, that the words which we hear are accompanied by the same thoughts, but this is a mere assumption based on an analogy; and suppose a thinking subject could be imagined devoid of consciousness we would not be entitled to assume that there exists outside of us any consciousness at all. No one, however, doubts that our fellow creatures are according to their organization ensouled as we are with more or less or no feeling, from the range of self-consciousness possessed by a thinking man down to the primitive sensibility of monera and amebas, and still further down to the irritability of plant life and the zero of sensibility that appears in purely physical phenomena.

In considering the existence of such a cosmic element we must strictly distinguish it as an element of its own kind which cannot be numerically added to the three others, either as a fourth or, as Dr. Hall has it, as a fifth. It is not objective and is not traceable in the objective world. It is subjective and it corresponds to the phenomena of the objective world. It differs from energy and matter, but its appearance and disappearance, as well as its intensity, depend upon the discharge of energy in the manifestation of bodily forms.

On former occasions[1] we have characterized the three ultimate generalizations of objectivity as the outside of existence while the subjective phenomena are its inside or inwardness. Both are two aspects of one and the same thing, and this theory has been called in psychology the theory of parallelism. We confess that the term "parallelism" is inappropriate; for there are not two realities, body and soul, objective existence and subjectivity, matter and spirit, brain and consciousness, acting in two places side by side parallel with each other, but there is one reality which in itself is feeling but when met from without appears to sense activity as material corporeality. Whatever a feeling feels, or a sensation senses, presents itself as matter in motion. Even a human person appears to others as a living body; his soul can not be seen; his feelings are invisible; his emotions can only be guessed from his behavior, especially his words and the expression of his face.

The conclusions from this conception of existence would lead us to the theory that all existence is endowed with potential feeling, that under definite conditions actual feeling originates, and that in

[1] See *The Soul of Man*, pp. 25 and 29; also *Whence and Whither*, pp. 7-15.

such actual feeling, as we assume forms itself in primitive animal substance like amebas, mentality begins to appear. The preservation of the forms of the physiological conditions of feeling in their connection with feeling is called memory. If a sensation of a definite form is registered in the brain-center of the same class, the old memory picture of all former pictures of the same form are revived, and as a result the perception of sameness originates. Thus it comes to pass that sensations become representative. When feelings become representative they denote the causes of sensation and thereby build up the soul, for the soul is a mirror of the world; it is a system of sentient symbols. There is not room here to explain further details which we have discussed previously on various occasions. We will limit ourselves to the statement that the substratum of consciousness must be the most primitive general condition of consciousness which we call subjectivity, and cannot be the highly complicated phenomenon of spirit.[2]

Of course every one is at liberty to coin new terms and Dr. Hall may understand by "spirit" exactly what we call subjectivity. We describe this subjectivity in its simplest form as potential feeling. It is that interior of reality which, viewed from the outside, appears as some form of matter in motion; the inside assumed to be according to its form a definite kind of subjectivity from which develops first irritability, then feeling, and at last consciousness, and at the same time thought, mind or spirit, the rules of which are formulated as reason.

Reason is the comprehension of a purely formal aspect of law in the objective world. In this generalized conception we notice a correspondence (or if you prefer, a parallelism) between the subjective construction of law in general which is reason, and the lawdom[3] (or, as the Germans call it, *Gesetzmässigkeit*) of the objective world.

The pious Christian may now ask, Is this not an atheistic philosophy, leaving the world without God and depriving man of his hope of immortality? But such is not the case. We must approach the God-problem in a practical way. We must not construct an idea of God and then, as did Kant, postulate it. We must ask what has been the significance of the God-idea in the history of mankind.

This question as to the significance of God has been variously answered and mostly in the wrong way. Man does not worry about

[2] For further details see *Philosophy of Form*, pp. 24-26.

[3] Lawdom is coined for the purpose of exactly translating the German term and expresses a much needed word.

the unknown and he ignores the unknowable. He worships only that which he knows, that which he fears, that which can hurt him. God must be a reality. Man's notion of God has been ascribed to a special revelation which has been accredited to an incomprehensible manifestation of an unknown power. Belief in God has been declared to be a special merit even in spite of logical difficulties. This is the old orthodox conception of God. Liberal thinkers, among them Herbert Spencer, have no room for a God-conception but replace it by the metaphysical *x*, the unknowable. But neither is this correct. Not the unknown or unknowable is deified, but those same known powers in the face of which man stands in awe. Man deifies what he fears. It is the half-known, the unintelligible, the terrible, the overawing which is deified rather than the harmlessly distant unknowable, and this has been developed in the course of time into a personification of all those factors of man's experience which he cannot fathom, which he must heed, to which he must submit, through which if he heeds them he is benefited and blessed, whereas if he acts contrary to them he is either severely punished or doomed, and these factors in their oneness we have briefly described as the authority of conduct. God everywhere appears as the ruler of the universe, the judge, the creator and preserver of the world; or, as it might be expressed in more philosophical language, he is the factor that determines the course of phenomena, he is the ultimate standard of truth and error, and of right and wrong.

In analyzing our experience we actually find that the world is not a chaotic medley, but a law-ordained whole, a cosmos. There is progress and evolution; there is right and wrong; there is truth and error; there is goodness and evil, and whatever that factor may be which constitutes the world-order, which determines the nature of truth, of justice, of right and of goodness mankind call God. This is ultimately the nucleus of the God-conception and this God is most assuredly an undeniable presence in the world, and in investigating the nature of this presence we find that the laws of nature are part and parcel of God, and so are all the laws and rules and theorems which we construct in the purely formal sciences, in mathematics, mechanics and also in their applications ultimately in the rules of conduct and the ideals of moral behavior.

The God-conception of orthodox Christianity, of Mohammedanism, of the Jews and of theistic religions in general appears from this point of view as a mere mythology which, under the allegory of a personification, foreshadows the true God of science, and we

understand that as astrology changed into astronomy, the old theology will have to change into a newer more scientific and truer conception of God, into theonomy.[4]

The nature of God is ultimately order. The term law is not correct because the laws of nature are not arbitrary ukases of a monarch but intrinsic uniformities. They are necessary because they cannot be otherwise, and in order to avoid the misleading word "law" we describe it by the Greek word *nomos,* meaning norm; for God is neither the subjectivity of the world not its objectivity although we must assume energy and substance to be eternal and if they are eternal their subjectivity or the potentiality of developing feeling and mind must also be uncreated and uncreatable. But these ultimate cosmic elements are not God. They are, as we may say, merely material for creating a world. That which constitutes the divinity of life and the cosmos is that norm which governs the world, which makes it possible that rational beings originate, that there is a definite direction in the world of purely mechanical phenomena, that thinking beings can set themselves purposes and pursue them, and finally that moral endeavor appears in the struggle for existence. In a word, God is normative and we may call this conception of God nomotheism, and this is the reason we would prefer to call its systematic and scientific investigation no longer theology but *theonomy.*

As to the question of the justice of God Dr. Hall says: "Consider the question 'Is God just?' By justice is meant equality of conditions and opportunities; or equal results for equal efforts of different individuals. As so defined justice is conspicuous by its absence from the universe. Paul claims that one vessel is made for honor, another for dishonor; and the inequality of conditions among men is patent. In the field of energy a very slight factor often makes the difference between intense action and almost no action. In matter, too, there is endless diversity of relation. And no two portions of either space or time are similarly related to the rest of the universe. Hence justice does not belong to the essence of the universe."

Dr. Hall's conception of justice still reflects his conception of an individual God-being who creates his creatures as the potter makes vessels, using them arbitrarily for different purposes. The scientific conception of creation shows that creatures develop by forming their characters as they react upon their surroundings.

[4] See the author's book *God, An Inquiry and a Solution,* pp. 124-128.

UMI

In this sense creatures are what they want to be, and their fate is according to their deeds, which implies that intrinsically considered the justice pervading the universe is identical with the law of cause and effect. This kind of justice is not external like the idea of man's sense of justice, apportioning awards in agreement with merit and punishments with evil doing; divine justice is an intrinsic justice. A creature (or, generally, a thing) is exactly what it has become through its own actions. Its merit consists in being what it is, not what it receives. A diamond possesses qualities which distinguish it to its own credit from other combinations of carbon such as coal and graphite, and we must not seek justice in the price for which here or there a diamond may be bought. In the same way the reward of a noble sacrifice does not consist in the recognition it finds in the eyes of the world and still less in the remuneration it receives. Rewards cannot be measured in dollars and cents and true justice is the superiority of intrinsic worth.

In our opinion Dr. Hall's conception of God is an aberration. It identifies God with evolution. He says: "The idea of an omnipotent and absolutely perfect God cannot be reconciled with the imperfections of the universe as we know it. But an evolving God is in harmony with all the facts we know, and cuts the knot of many an unsolved problem. This idea of evolution as an essential character of God is not easy to grasp fully. It contradicts the common view of God as unchangeable or as the Absolute. The whole known universe is in the march of evolution. Its essence is therefore evolving. Its plan is being formed, its aims are more clearly defined now than ever before, its consciousness clearer and more extensive." Further down Dr. Hall says: "In the evolutionary sense, God is not wholly good, but is becoming good."

Dr. Hall's God is not the ultimate norm of the cosmos, but its manifestation. We may very well call this tendency of evolution God, but we must bear in mind that this God is a definite and concrete interrelation of all the facts of existence in successive stages. It is not the ultimate divine norm, it is its application, and in Christianity this idea corresponds to the idea of God as the Holy Ghost through whom the God-man or Christ, or Buddha, or whatever we may call God incarnate, is born into the real world of actuality.[5]

Our God-conception as the ultimate norm of existence is based

[5] For further details of this conception which underlies the doctrine of the trinity, see the author's *Personality*, pp. 46-60.

on very radical arguments for not even the atheist will seriously object to it. Nevertheless it is quite conservative and is in perfect agreement with traditional orthodoxy. This God is as supernatural as the God of the Old Testament, for God as the norm of the world would exist even if the world did not exist. In this sense God is above nature. He is truly and in the literal sense of the word supernatural. This God-conception is not the old pantheism and is very different from the common God-conception of liberal Christians. This God is not a person in the sense of an individual being and yet this God is not impersonal in the sense of having nothing to do with personality. This God is more personal than any person of human type for he is the prototype of personality; he is superpersonal. His dispensation as the ultimate condition of rationality and of moral aspiration makes it possible that an animal can develop into a personality. The appearance of personality in the purely physical world as it blossoms forth from animal life is due to him—indeed it is a revelation of his inmost being. Our habit of speaking of God as "he" not "it" is due to our need of using the most dignified expression for that power which deserves our highest reverence, for it is understood that as God is not an individual being but a universal norm, he is neither man nor woman, he is not a concrete individual, but the efficient norm which dominates the entire cosmos and also every phenomenon—the course of the stars and of the motes circling in every atom obedient to the laws of motion. We must not speak of the blind laws of motion, for though they are not conscious in the sense of human consciousness, though they do not argue according to the modes of deductive logic after the custom of human reason, they are not to be called blind as is so often done; they are not irrational for they possess definiteness and impart to existence a definite character, and it is this character, the character of God, which gives sense and meaning to the whole creation.

EDITOR.

A CORRECTION AND SOME REMARKS.

In the first place I must make a correction to the story in the third paragraph on page 151 of my article in *The Monist* for January, 1912. Mr. Russell tells me that the original of the story is that some of his hearers were disappointed that after a whole term's lecturing on the principles of mathematics Mr. Russell had never proved the elementary rule of algebra that "Minus into minus gives

plus." So Mr. Russell came back in the long vacation simply to finish the lectures by a proof of that important theorem.

Again, on page 153 of my article, I indicated an early statement of Russell's contradiction. Mr. Russell has informed me that he wrote the article referred to in January and found his contradiction in June. In January he had only found that there must be *something* wrong; for Cantor's proof would show that there is a greater transfinite cardinal number than the number of all entities.

The remarks I have to make are on the subject of the misrepresentation of the tendencies of the work of Frege, Peano, and Russell. I have tried to show this, in one case, in the article to which I have just referred; and, in another way, a misrepresentation is shown in that article of Poincaré's of which a part has been translated in *The Monist* for April 1912. What seems to me the principal thing in modern developments of mathematical logic is an emphasis on the fact that in mathematical arguments, we are concerned not with propositions but with what Russell has called *propositional functions*. Thus, the statement "x is a man" is the expression of a propositional function; whereas when the x is given some fixed denotation like "Socrates," the propositional function gives rise to a proposition. The sign x is analogous to what is called the *argument-sign* in the expression of a mathematical function, and there is, as Frege expressed it, *incompleteness* about a function,—"the x" only holding a place open into which various signs representing constants, like Socrates or Chicago, may be put. The result of putting any one of these in the place of x is a proposition which is either eternally true or eternally false, and not sometimes true or sometimes false, as one is prone—rather inaccurately— to say of a propositional function. Now, in most ordinary discourse and in mathematics we state implications between propositional functions and not between propositions. Thus, such a statement as: "When it rains in London, Mr. A. of New York will turn his trousers up" is obviously an implication between two propositional functions; each function depending, as we would say in mathematics, on a variable representing the time. In mathematics, we may show how implication between propositional functions occurs by an illustration due to Russell[1]: "The fifth proposition of Euclid follows from the fourth; if the fourth is true, so is the fifth, while if the fifth is false, so is the fourth. This is a case of material implication [Russell called by the name of "material implication" implication between

[1] *The Principles of Mathematics*, 1903, p. 14.

propositions and by the name of "formal implication" implication between propositional functions], for both propositions are absolute constants, not dependent for their meaning upon the assigning of a value to a variable. But each of them *states* a formal implication. The fourth states that if x and y be triangles fulfilling certain conditions, then x and y be triangles fulfilling certain other conditions, and that this implication holds for all values of x and y; and the fifth states that, if x is an isosceles triangle, x has the angles at the base equal. The formal implication involved in each of these two propositions is quite a different thing from the material implication holding between propositions as holds; both notions are required in the propositional calculus, but it is the study of material implication which specially distinguishes this subject, for formal implication occurs throughout the whole of mathematics."

It is, perhaps, the greatest merit of Peano that he distinctly perceived and emphasized this important fact. Indeed, he rather unduly neglected propositions in his calculus, and, when he spoke of "propositions," he really meant what we, following Russell, call "propositional functions." The great difficulty that always stood in the way of the application of logic to mathematics was the fact that in traditional logic the two kinds of implication were certainly confused together, but the only kind of implication explicitly considered was a material implication.

When Dr. Carus emphasizes that the notion of "anyness" is fundamental in mathematics, he seems to be in essential agreement with Peano and Russell that the terms which stand on either side of an implication in mathematics are propositional functions and not propositions. I do not know whether one ought to go farther, and say that Dr. Carus intended by this phrase that the region of the variable in mathematics is unrestricted, and definitions are to be made and implications stated without hypotheses restricting the variable to a certain class. If so, the phrase would indicate an advance beyond the position of Peano to a closer agreement with the present views of Frege and Russell.

It is much to be regretted, accordingly, that the article by Mr. Russell[2] of which I have given some account in *The Monist* for January, 1912, should have been marred by misprints or other alterations of Mr. Russell's phrases, and thus have given a wrong impression to Dr. Carus. The fact is that Mr. Russell's article was written with that combination of seriousness and wit to which he

[2] Published in the *International Monthly*, 1901.

UMI

has accustomed us; the alterations seemed to do their best to make part of his article either frivolous or pompous.

PHILIP E. B. JOURDAIN.

CAMBRIDGE, ENGLAND.

THE MECHANISTIC PROBLEM.

This number of *The Monist* contains much valuable material on the pro and con of the mechanistic problem. The dualist side is maintained by Dr. William Benjamin Smith of Tulane University who formulates the question with great precision and makes an eloquent plea for the idea that the present is governed by the future and that man is not mechanically pushed but that his ideals pull him upward and on. Dr. Jacques Loeb of the Rockefeller Institute, on the other hand, represents the extreme naturalists who scent the old-fashioned teleology not only in theology but also in all philosophical aspirations. His view is supported, in the name of the late Clémence Royer and her followers, by M. Aristides Pratelle. Professor Loeb goes so far as to suggest that ethicists and educators of the future will have to find their medicine for curing the moral ills of mankind in the storehouse of biochemistry, a proposition which is well brought out by one of his admirers, Dr. Leonard Keene Hirshberg.[1]

The editor of *The Monist* deems both positions wrongly taken, or rather thinks that both are one-sided presentations of certain truths which if properly stated form no contradiction but present a contrast of the greatest importance.

The contrast between these two views may be traced through the history of philosophy. There have always been thinkers on either side, and both views have been upheld with great vigor and have been important factors in the development of mankind. We intend to publish an editorial on the subject in a forthcoming number and wish here merely to characterize briefly our view.

We believe that the mechanistic theory is absolutely right in so far as it claims that the mechanical principle has to be applied to all events, processes and happenings without any exception, for necessarily all movements must take place according to mechanical laws—even the motions of the brain can form no exception; but we insist that mechanical laws apply only to mechanics, which truth

[1] See the review of Professor Loeb's recent book, *The Mechanistic Conception of Life*, pp. 152-158, especially 154 ff.

may be expressed in the tautology that all motions are subject to the laws of motion.

Nevertheless, there are features in the world which are not motions, and it is wrong to expect an explanation of their nature and significance from the laws of motion. This is especially true of the interpretation of forms in the actual world and of the products of formal combinations in the realm of purely formal thought. Among other things we have to deal with logic and geometry. How can we deduce a logical syllogism from mechanistic principles if the interconnection of logical ideas is purely logical; and, further, according to what mechanistic principle can we explain the interrelation of a triangle by laws of motion? The reverse is true: we explain mechanics from, and formulate the laws of mechanics according to, the theorems of geometry, and the mechanics of thinking find their explanation in the more general laws of logic. To construct a triangle we must draw lines but from the act of drawing lines we cannot prove the interrelation of the parts of the triangle.

Motion is a generalization of all changes of place that occur in our own bodies and in the entire objective world around us. But in making this generalization we omit one highly important feature of our experience, namely, the feeling which is the ultimate condition of our entire psychic and mental life.

We do not believe that there are feelings in themselves; we accept the theory of the so-called parallelism. We believe that feelings are the inner side of physical occurrences; feelings are the subjective aspect of certain motions which take place in organisms.

We consider it a fact that the main feature of mental life consists in purpose. Man is a purposive being; he follows the lead of ideals, of aspirations, of aims which he pursues, and one of the main problems of philosophy is to explain how such a thing as purpose can originate in a world where all events, all happenings, all motions, take place according to mechanistic principles.

The reader will notice that we limit the application of the mechanistic principle to motions and we state that all happenings, all events, all occurrences, all processes, all acts of living beings, including the acts of man, are motions, or changes, or to be quite unequivocal, they are somehow changes of place. But those features of life which are not motions play also an important part. They affect the mechanical processes of life and in them the non-mechanical lies hidden.

Thinking, that is to say, the act of thinking, in its physiological

aspect as a cerebral motion is absolutely mechanical. Every idea is a definite brain structure and in its action it is as much subject to the law of mechanics as is the falling stone. But is the meaning of the idea mechanical? Here lies the problem.

Not finding room in this number for the exposition of this important subject, we must be satisfied here to let the representatives of both sides have their say and for ourselves will only reserve the right to discuss the problem in the near future. P. C.

WRONG GENERALIZATIONS IN PHILOSOPHY.

SCHOPENHAUER AND FREUD.

One common source of error in philosophy has been the principle of generalization wrongly applied. For the sake of explaining phenomena we must understand that a higher development produces new conditions which are absolutely absent in the lower strata of life. Now it happens that some philosophers take features typical of the highest and most complicated forms of existence and generalize them to explain the nature of lower forms. Others do the reverse. They generalize the lowest forms and explain all higher features as mere repetitions of simpler modes of activity.

As a typical instance of the wrong generalization of the higher forms of life over all lower manifestations, we refer to Schopenhauer and his theory of the will. When the stone falls the naturalist calls it gravity, and we ask with surprise what is the impulse that makes the stone fall. Schopenhauer answers, It is the will. The stone wills to fall to the center of the earth according to the Newtonian law and that explains the phenomena of gravitation. Goethe makes Mephistopheles in his rôle of professor say to the student that man is pleased to hear words:

> "With words 't is excellent disputing;
> Systems to words 't is easy suiting;
> On words 't is excellent believing;
> No word can ever lose a jot from thieving."

The opposite course, but in principle the same method, is followed by Freud who bases his psychology upon the erotic instinct. The higher life of man is enfolded in a rich complexity of noble and sometimes highly altruistic tendences, in the love of parents, devotion of children, love of country, of ideals and many aspirations. Observers of life stand in awe before the wonders of

the human mind, the sacrifices brought without any reference to selfish motives, and we ask how is such nobility of character possible. Then comes the psychologist who has observed the deep-seated erotic passion and shows that ultimately all these wonderful phenomena are to be explained as modifications of the sexual instinct.

The Freudian theory is practically the same mistake that Schopenhauer commits, only in its reverse aspect. Freud generalizes the lower tendency so as to cover the highest efflorescence of mental life. The general public given to being satisfied with mere words is pleased to have an answer. A word takes the place of an explanation and the philosophical demand is supplied, at least for a while.

Freud's theory has become quite prominent but we predict that it will not last. In his various investigations he has made many valuable comments but on the whole his explanations do not explain; they leave the problem where it was before. They are born of the need of a monistic explanation indicating that all phenomena are to be classified under one heading, and the success of the theory will last as long as the personality of the master holds the attention of the reading public. P. C.

BOOK REVIEWS AND NOTES.

THE MECHANISTIC CONCEPTION OF LIFE. By *Jacques Loeb, M. D., Ph. D, Sc. D.* Chicago: University Press, 1912.. Pp. 232. Price $1.50 net.

The ideal of science is to establish on a firm basis the mechanistic conception of life, and Prof. Jacques Loeb has been one of the most enthusiastic and efficient workers in this line of investigation. He has succeeded in performing a number of experiments whereby he has proved that the interference with the organs of animalcules produces effects analogous to the interference, and that certain actions depend on definite constitutions which he classifies as their tropisms, just as much as the sizes of wheels and cranks in machinery determine the movements of an engine. The book before us contains a number of articles which were used on different occasions either as lectures or as essays, and all of them characterize the tendency "to analyze life from a purely physico-chemical view-point." The first chapter is an English translation of Professor Loeb's address at the first international congress of monists at Hamburg, and may be considered as a general program of the mechanistic conception. The difficulty of this view comes in when we come to the properly psychical phenomena of the higher animals, especially man, and here Professor Loeb also insists on the principle that "all life phenomena can be unequivocally explained in physico-chemical terms," and he continues that even "our social and ethical life will have to be put on a scientific basis, and our rules of conduct must be brought in harmony with the results of scientific biology," and by "scientific" Professor Loeb understands physico-chemical.

Professor Loeb selects as most significant instances the tropisms of various animals. Referring to the specific life processes, he says that "if we can convince ourselves that these processes can be explained physico-chemically we may safely expect the same of such processes for which there exist *a priori* analogies in inanimate nature, as, e. g., for absorption and secretion."

Professor Loeb says: "The contents of life from the cradle to the bier are wishes and hopes, efforts and struggles, and unfortunately also disappointments and suffering. And this inner life should be amenable to a physico-chemical analysis? In spite of the gulf which separates us to-day from such an aim I believe that it is attainable. As long as a life phenomenon has not yet found a physico-chemical explanation it usually appears inexplicable. If the veil is once lifted we are always surprised that we did not guess from the first what was behind it.

"That in the case of our inner life a physico-chemical explanation is not beyond the realm of possibility is proved by the fact that it is already possible for us to explain cases of simple manifestations of animal instinct and will on

a physico-chemical basis; namely, the phenomena which I have discussed in former papers under the name of animal tropisms. As the most simple example we may mention the tendency of certain animals to fly or creep to the light."

This principle applied to ethics is explained thus: "If our existence is based on the play of blind forces and only a matter of chance; if we ourselves are only chemical mechanisms—how can there be an ethics for us? The answer is, that our instincts are the root of our ethics and that the instincts are just as hereditary as is the form of our body. We eat, drink, and reproduce not because mankind has reached an agreement that this is desirable, but because, machine-like, we are compelled to do so. We are active, because we are compelled to be so by processes in our central nervous system; and as long as human beings are not economic slaves the instinct of successful work or of workmanship determines the direction of their action. The mother loves and cares for her children, not because metaphysicians had the idea that this was desirable, but because the instinct of taking care of the young is inherited just as distinctly as the morphological characters of the female body. We seek and enjoy the fellowship of human beings because hereditary conditions compel us to do so. We struggle for justice and truth since we are instinctively compelled to see our fellow beings happy. Economic, social, and political conditions or ignorance and superstition may warp and inhibit the inherited instincts and thus create a civilization with a faulty or low development of ethics. Individual mutants may arise in which one or the other desirable instinct is lost, just as individual mutants without pigment may arise in animals; and the offspring of such mutants may, if numerous enough, lower the ethical status of a community. Not only is the mechanistic conception of life compatible with ethics: it seems the only conception of life which can lead to an understanding of the source of ethics."

These quotations are sufficient to characterize the tendency of the book. In the field of comparative physiology the unraveling of the mechanism of associative memory is the great discovery to be made in the realm of physiological morphology. While Professor Loeb has done good experimental work, he points out that there is a higher aim than to discover the laws of organization of the tissues, for we should endeavor to form new combinations from elements of living nature, just as the physicists and chemists form new combinations from the elements of living substance. In the field of fertilization much has been done of late which may almost be called sensational, for the process of fecundation is no better understood than before, and strange to say parthenogenesis has become an established fact, for we can experimentally prove that an egg may be fertilized by different stimuli without the introduction of a sperm. A special article is devoted to a discussion of the rôle which salts play in the preservation of life. At the end of the book Professor Loeb points out that the insight gained into the mutations that take place and the laws of heredity—the former represented by the labors of De Vries, the latter by the laws of Mendel—place before the experimental biologist the difficult task of producing favorable mutations by physico-chemical means. Nobody has thus far succeeded in this, although nothing warrants us to take it for granted that the task is beyond the power of science.

With regard to Professor Loeb's experiments directed towards the dis-

covery of mechanical causes of will, Dr. Leonard Keene Hirshberg sends the following detailed review:

"Professor Jacques Loeb, M.D., Ph.D., Sc.D., and Member of the Rockefeller Institute for Medical Research, has applied scientific methods of the biological laboratory to throw light upon the great ethical problem of free will. His researches are startling to say the least. Like the recent prophecy of Prof. A. E. Schaeffer, the great English physiologist, his report will bring down the condemnation of all creeds and churches upon his work.

"Although most of us will not at this time agree with Professor Loeb, although his deterministic conception of life is revolutionary in its discovered facts, at this moment we lack the laboratory and experimental data to deny Dr. Loeb's conclusions. Therefore in a perfectly fair spirit, without agreeing with or disputing his discovery, I shall present here with all technical matters omitted, the mass of newly exposed facts opened up to the world by the genius of this great savant.

"Perhaps not since Loewoenhoeck first observed the cell, since Jenner gave us a means of preventing smallpox, Koch and Pasteur proved bacteria to be concerned with diseases, Sir A. E. Wright exposed the mechanism of vaccination, and Ross with Manson proved the mosquito guilty of transmitting malaria, has there been such a startling announcement from the laboratories of the experimental sciences as this one of Dr. Loeb. All the problems of sociology, commerce, creeds, religions, ethical practice, finance, and community effort hinge upon the verification or refutation of his discovery.

"Through the writings of Schopenhauer he became interested in the problem of will. When as a student he read Munk's investigations on the brain he believed that they might serve as a starting point for an experimental analysis of will. Munk stated that he had succeeded in proving that every memory-image in a dog's brain is localized in a particular cell or group of cells and that any one of these memory-images can be extirpated at desire. Five years of experiments with sections and slices of brain proved to Dr. Loeb beyond doubt that Munk had become the victim of an error and that the method of brain operations may give data concerning the path of nerves in the central nervous system, but that it teaches little about the activities of brain processes.

"A better opportunity seemed to offer itself in the study of the comparative psychology of the lower animals in which the machinery for memory is developed but slightly or not at all. It seemed to him that some day it must become possible to discover the physico-chemical laws underlying the apparently random movements of such animals; and that the word 'animal will' was only the expression of our ignorance of the forces which prescribe to animals the direction of their apparently spontaneous movements just as certainly as gravity prescribes the movements of the planets.

"The scientific solution of the problem of will seemed then to consist in finding the forces which determine the movements of animals, and in discovering the laws according to which these forces act. Experimentally, the solution of the problem of will must take the form of forcing any number of individuals of a given species to move in a definite direction by means of their locomotor apparatus. Only if we succeed in this have we the right to assume that we know the force which under certain conditions seems to everybody

to be the will of the animal. But if one part only of the animal moves in this direction and the other does not, we have not succeeded in finding the force which determines the direction of the creature's movement.

"Some experiments on winged plant-lice may serve as an introduction to the methods of prescribing to animals the direction of their movements.

"In order to obtain the material, potted rose bushes infested with plant-lice are brought into a room and placed in front of a closed window. If the plants are allowed to dry out, the plant-lice, previously wingless, change into winged insects. After this metamorphosis the animals leave the plants, fly to the window, and there creep upward on the glass. They can easily be collected by holding a test-tube underneath and touching one insect at a time from above with a pen or pencil, thus causing them to drop into the test-tube. With these insects it may be shown that the direction of their movement toward the light is definitely determined—provided that they are healthy and that the light is not too weak. The experiment is so arranged that only a single source of light, that is, artificial light, is used.

"The insects place themselves with their heads toward the source of light and move toward it in as straight a line as the imperfection of their locomotor apparatus allows, approaching as near to the source of light as their prison (the test-tube) permits. When they reach the end of the test-tube which is directed toward the source of light, they remain there, perfectly still, in a closely crowded mass. If the test-tube is turned 180 degrees the lice again go straight toward the source of light until the interference of the glass stops their further progressive movements. It can be demonstrated in these insects that the direction of their forward movement is just as much governed by the source of light as the direction of the movement of the planets is determined by the force of gravity.

"The following is an example of animals, which when attracted by light are forced to turn their heads or more often their bodies toward the source of light, and when repelled by light are pointed away from and compelled to move in the opposite direction.

"The plant-lice serve only as one example. All animals influenced by light are in reality machines by which light may be measured. According to the laws of light its strength varies with the angle at which the light strikes the surface of the animal. The animal is pointed towards or away from the light in such a way that symmetrical parts of its sensitive surface are struck at about the same angle. In the presence of only one source of light this condition is fulfilled if the axis of the animal moves in the direction of the rays of light. In this case the speed of the changes which take place on both sides of the animal is the same and there is no reason why it should deviate from this direction in its movements.

"Experiments in the effect of light on plants as well as on the perception of light have shown that the effect of light equals the product of the strength by the time that the light is acting. This law is identical with the general law of Bunsen and Roscoe which states that the chemical effect of light is within wide limits equal to this product. It is not known whether or not Bunsen's law holds good for the animals affected by light. If it does, this law will have to be substituted for what the metaphysician calls 'the will' of these animals.

"Many animals show no 'heliotropism' or light influence at all; many show only a slight response to light, while others show it in a degree as pronounced as do winged plant lice. The problem therefore presented itself to Professor Loeb of artificially producing heliotropism, or response of a creature to the influence of light, in animals which, under natural conditions, show no heliotropism. If small crabs of a fresh-water pond or lake are taken with a net at noontime or in the afternoon and placed in an aquarium which is illuminated from one side only, it is often found that these animals move about in the vessel pretty much at random and distribute themselves irregularly. Some seem to move toward the source of light, others in the opposite direction, and the majority perhaps pay no attention to the light.

"This condition changes instantly if we add to the water some acid, preferably carbonic acid, which easily penetrates the cells of the animal. All the individuals become active and approach the light. They move in as straight a line as the imperfection of their swimming movements permits, toward the source of light, and remain there closely crowded together on the illuminated side of the vessel. If the vessel is reversed they go directly back again to the lighted side of the vessel. Every other acid acts like carbonic acid, and alcohol acts in the same manner, only more weakly and much more slowly. Animals which were previously indifferent to light become, under carbonic acid treatment, complete slaves of the light.

"The acid acts as a sensitizer. The light produces chemical changes—for instance, oxidation—on the surface of the animal, especially in the eye. The mass of substance which is acted upon by the light is often relatively small, so that even when the light strikes the crab on one side only, the difference in the chemical changes on the two sides of the body remains still too small to call for a difference in tension or action in the muscles of the two sides of the body, sufficient to turn the animal toward the source of light. But if an acid is added, this could act increasing the active parts of the substance which undergoes a chemical change. Thus the acid makes the animal more strongly attracted towards the light by increasing the active mass of the sensitive substance on its body.

"Some authors have, it seems, worked only with animals which were not pronouncedly 'heliotropic' or influenced by light and whose photo-sensitiveness wavered about the threshold of stimulation. Professor Loeb believed that observations upon animals which are not sufficiently photo-sensitive have caused many writers to assert that animals do not place themselves directly in the line of the rays of light, but that they first have to learn the right direction to go. Every striking experiment contradicts this assertion. The larvæ of a small marine animal develop entirely in the dark. If the eggs filled with mature larvæ are placed in a watch crystal filled with sea-water in the dark, the larvæ emerge at once to the side of the crystal nearest to the window. They were therefore pronouncedly attracted by light before they came under the influence of the light, literally before they are born.

"In experiments with winged plant-lice, Professor Loeb often found that after having gone through the heliotropic reactions a few times they react much more quickly to light than at the beginning. This might be interpreted as a case of 'learning.' In so far as it is not a case of lessening of the stickiness of the feet or the removal of some other purely mechanical factor which

retards the rate of movement, it may be brought about by the carbonic or lactic acids produced through the muscular activity.

"It is a well-known fact that during sexual maturity special substances are formed which influence various organs. For instance, Professor Loeb has found that the substances which are set free by the bursting of an egg causes special sensitiveness in the non-pregnant animal.

"It is a common phenomenon that animals in certain larval stages are positively attracted by light, while in others they are not sensitive to light or are even negatively repelled by it. This change in the heliotropic sensitiveness produced by certain chemical products in the animal body, is of great biological significance.

"The fact that ants and bees become positively attracted to a source of illumination at the time of sexual maturity plays an important rôle in the vital economy of these creatures. As is well known the mating of these insects takes place during the so-called nuptial flight. Professor Loeb found that among the male and female ants of a nest the sensitiveness to light increases steadily up to the time of the nuptial flight and that the direction of their flight follows the direction of the rays of the sun. He gained the impression that this nuptial flight is merely the consequence of a very highly developed heliotropic or light sensitiveness. The following is an experiment which shows that the case is similar among the bees. The bees were ready to swarm out of the opening of the box used for the experiment when the dark covering of the box was removed so that the light entered it from above. The sensitiveness of the animals to light was so great that they crept upward within the box, following the direction of the light rays, and were not able to make the nuptial flight. Thus, according to these observations the bees at the time of the nuptial flight are *positively heliotropic* machines.

"The attempt has been made to prove that organisms are attuned to a certain intensity of light and so regulate their heliotropism, that they invariably reach that intensity of light which is best suited to their well-being Professor Loeb believed that this was a suggestion forced upon the investigators by the extreme application of the theory of natural selection. He made experiments upon a large number of animals, but, with a clear arrangement of the physical conditions of the experiment, he has never found a single indication of such an adaptation.

"Animals are in general symmetrically built, and the muscles of the right and left sides of the body usually act symmetrically. There are animals, however, which move sideways, for instance, certain crabs like the fiddler crab. It was also found out that they go sideways toward the light. Professor Loeb says that in the fiddler crab there is an entirely different connection between the retina and the locomotor muscles from that in other crabs, and that there is a special peculiarity in regard to the function of the two eyes whereby they do not act like symmetrical elements.

"These facts may suffice to explain his point of view. To him it was a question of making the fact of psychology accessible to analysis by means of physical chemistry. In this way it is already possible to reduce a set of movements, namely the influence of light, to simple mechanical relations. Many animals, because their body structure is not only anatomically, but also

chemically symmetrical, are obliged to direct their bodies in a certain way in relation to certain centers of force, as, for instance, the course of light, an electric current, the center of gravity of the earth, or some chemical substances. This direction is automatically regulated according to the law of size and shape. The application of this law to this set of influences is thus made possible. Professor Loeb considers it unnecessary to give up the term 'comparative psychology,' but is of the opinion that the facts and discoveries of animal psychology, under the influence of the experiments of himself and others, will be different from the contents of speculative psychology. But he also believes that the further development of this subject will fall more to the lot of biologists trained in physical chemistry than to the specialists in psychology or zoology, for it is in general hardly to be expected that zoologists and psychologists who lack a physico-chemical training will feel attracted to the subject of the influence of light and other external things in an animal's surroundings, and a study of their effects.

"Professor Loeb says concerning the possible application of these investigations that the investigations of the conditions which produce them may be of importance for the study of insanity in man. If by means of an acid we call forth in an animal otherwise indifferent to light an effect which drives it irresistibly into a flame; if the same thing can be brought about by means of an extract of the reproductive glands he believes a group of facts have been given within which the analogies necessary for a study of insanity can be called forth experimentally and can then be investigated. Says Professor Loeb: 'These experiments may also attain a similar value for morality and ethics. The highest manifestation of ethics, namely, the condition that human beings are willing to sacrifice their lives for an idea, is comprehensible neither from the utilitarian standpoint nor from that of the categorical imperative or the "still small voice." It might be possible that under the influence of certain ideas chemical changes, for instance, internal secretions within the body, are produced which increase the sensitiveness to certain stimuli to such an unusual degree that such people become slaves to certain stimuli just as crabs become slaves to the light when carbon dioxide is added to the water. Since Pawlow and his pupils have succeeded in causing the secretion of saliva in the dog by means of optic and acoustic signals, it no longer seems strange to us that what the philosopher terms an "idea" is a process which can cause chemical changes in the body.'"

DIE MECHANIK IN IHRER ENTWICKLUNG. Historisch-kritisch dargestellt von *Dr. Ernst Mach.* Leipsic: Brockhaus, 1912.

It may well be a source of gratification to Professor Mach that forty years after the first utterance of his favorite principles and almost thirty years after their appearance in the more comprehensive form of his *Mechanik,* there comes a demand for a seventh edition of this work. In his preface to this revised and enlarged edition the venerable scientist relates something of the history of the book, and the reception accorded it and the principles for which it stands. When the author's ideas were first promulgated they not only met with little recognition and encouragement but with general opposition. When Kirchhoff published his views two years later Mach was accused of having

misunderstood him whereas he "must beg to disclaim this prophetic misunderstanding of a statement before it was made, on the ground that it does not accord with his prophetic gift and intellectual powers." Nevertheless the book has survived not only a seventh edition but also translation in the English, French, Italian and Russian languages. Mach considers that his views were most popular in the latter part of the last century when the empirical side of mechanics had been too much neglected. Now the Kantian traditions are again at the front so that there is once more a demand for an *a priori* foundation of mechanics. Mach has made it clear that both the logical and empirical sides of the subject demand investigation even though his own work leans to the empirical side.

This edition is somewhat more homogeneous than its predecessors. Much polemical discussion which has no interest for to-day has been omitted and much new material has been added, though the character of the book remains the same. Mach says: "With regard to the conceptual monstrosities of absolute space and absolute time I can take nothing back. I have shown only more clearly than before that although Newton had much to say about these things yet he made no serious application of them. His fifth corollary contains the only practically usable inertial system, and it is probably only an approximation." ρ

THE AMERICAN PHILOSOPHY PRAGMATISM. By *A. v. C. P. Huizinga.* Boston: Sherman, French & Co., 1911. Pp. 64.

Rev. A. v. C. P. Huizinga in sending us his criticism of pragmatism refers to it as "the criticism of a Calvinist." He declares that the latest works of Professor James, the "gifted and scholarly exponent" of pragmatism, "plainly bear witness to the fact that the real point at issue is a denial of the supernatural, a discarding of the notion of being, involving a static element. It is a revolt against all tradition, authority and unity; it sets itself against all regulative norms and law."

The author concludes his preface with these words: "In sending forth this essay I hope that it may contribute to a more earnest consideration of life's issues, from *Weltanschauung* to *Gottanschauung*, that the spirit of truth may lead us into all truth. May many by faith learn Jesus as the truth, and so learn to consecrate themselves to the truth as it is in Jesus!"

In criticism of Mr. Huizinga's view we would suggest that Professor James is not quite so systematic and concise as he appears under the critical consideration of Mr. Huizinga. It is true that Professor James defies all authority as systematic unity in its norm and law, but he never denied the supernatural. On the contrary he found in the irregularity of his cosmic conception a loop-hole for any kind of supernaturalism, not exactly the theistic conception of it as purely demonistic possibilities which would revive many of the old superstitions which flourished even as early as being prior to Christian monotheism. κ

DIE WELTANSCHAUUNG ROBERTO ARDIGO'S. Von *Dr. J. Bluwstein.* Leipsic: Eckardt, 1911. Pp. 122. Price 1.50 m.

Roberto Ardigo is an Italian professor whose philosophy is little known

outside of Italy. In Germany he has recently found an interpreter in Dr. J. Bluwstein, who has brought Ardigos' works before the philosophical department of the University of Leipsic in a course of lectures. Ardigo was born in 1828 and is still pursuing active intellectual labors. His biographer refers to his course of life as a unique one, from that of a Catholic priest to an apostle of an unreligious world-conception. He calls his philosophy "positivism" and bases it on "the fact" as its fundamental concept. The first chapter of Dr. Bluwstein's work contains a presentation of Ardigo's positivism; the second is a characterization of that philosophy; the third treats of the scientific spirit according to Ardigo's world-conception; and the fourth is devoted to the results. A fifth chapter is added as an appendix containing complementary notes on the whole. P

LA SOCIÉTÉ ET L'ORDRE JURIDIQUE. Par *Alessandro Levi.* Paris: Octave Doin, 1911. Pp. 396. Price 5 fr.

This volume is one number of the sociological library (edited by Gaston Richard) which forms one of the forty parts of the *Encyclopédie scientifique.* This encyclopedia is to comprise about a thousand scientific monographs and books and is intended to equal or surpass all encyclopedic works of other countries by its closely scientific character and the clearness of its expositions. The author of the volume before us is professor of the philosophy of law at the University of Ferrara and he here presents to the world an investigation of the bases of juridical order which he introduces by a chapter on the place of the philosophy of law in the logic of the sciences and in social life. He then discusses in turn personality in connection with the rise of the idea of law; nature; society and juridical procedure; presumptions and juridical fiction; the objective and subjective sides of law and the idea of law compared with that of justice. The book is furnished with an excellent bibliography covering almost one hundred and fifty names, besides a thorough alphabetical index of authors and subjects. P

WELTBEGRIFF UND ERKENNTNISBEGRIFF. Von *Viktor Kraft.* Leipsic: Barth, 1912. Pp. 232. Price 5 marks.

This little book is an investigation of the nature of the conceptions of the world and of cognition by epistemological methods. The author Dr. Viktor Kraft has been an adherent of idealism, but has passed over to a realistic interpretation of the world. The difficulties of all different idealistic conceptions have after a careful investigation led him to the conclusion that practically the subjective, the objective, the transcendental idealism are of the same type as the metaphysical idealism of a century ago, and that their latest consequence must be a subjective idealism. But in turning around to try the realistic interpretation of nature, which the author believes must be openly and frankly confessed, he comes to the conclusion that realism involves the dualism of the physical and psychological; hence that it is the duty of philosophy to investigate critically the problems which originate through the assumption of a dualistic realism. He endeavors to prove the objectivity of reality as one of the main demands of science, but in spite of his attempt to be just to all problems, we can not say that his arguments are convincing. K